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DISEASES CAUSED BY BACTERIA AND FUNGI

SMITH, W., HALE, J. H., & SMITH, M. M. (1947.) **The role of coagulase in staphylococcal infections.**—*Brit. J. exp. Path.* **28.** 57–67. **2179**

While most strains of *Staph. pyogenes* fail to coagulate g. pig or mouse plasma at 37°C., occasional strains produce a coagulase which is effective against one or other of these activator-deficient plasmas. Experimentally, strains producing a coagulase effective against g. pig plasma were found to be more virulent for g. pigs, when inoculated by the intratesticular, intradermal, intracardiac or intravenous routes, than strains not producing such a coagulase, irrespective of their alpha-toxigenicity. It seemed that the determinant factor in virulence and invasiveness was the power of forming a coagulase effective against the plasma of the host recipient. Since none of the strains used were effective against mouse plasma, it was expected, and confirmed, that there would be no similar sharp division into virulent and non-virulent groups when they were tested in mice by intravenous inoculation. The virulence of staphylococci for mice could be enhanced for mice by coating the organisms with a coagulable menstruum (human or rabbit plasma) before intravenous or intraperitoneal injection.—E. COTCHIN.

HANSEN, P. L. (1945.) Om Streptokokmastitis. Navnlig med Henblik paa Udbredelse, Betydning og Bekaempelse. **[Streptococcal mastitis, its occurrence and control.]**—*Maanedsskr. Dyrlaeger.* **57.** 457–480 & 481–486. **2180**

This paper deals with the incidence of streptococcal mastitis in cows in Denmark, with the loss in yield of milk and butter occasioned by it and with the methods of control.

H. considers that the only accurate method of diagnosis is by culture of milk from the individual quarters of the udder, and that for control such examinations should be carried out twice yearly.

Of 8,308 cows examined in a representative selection of Danish stock farms, 3,602 (43·4%) were found to be infected, the percentage being higher in large farms (51–232 cows) than in the small (2–10 cows). The loss in milk yield was about 8% in the 3,191 cows of a group of farms examined.

Emphasis is laid on the importance for control of personal visits and explanation and of the need for co-operation between owners and farm staffs. Rules for hygiene are discussed.

Hitherto, treatment of the infected udder has been with trypaflavine (0·07 parts per 1,000), but recent work indicates that penicillin may give still better results.

Streptococci (both haemolytic and non-haemolytic) of different groups can cause mastitis, but Group B (*Streptococcus agalactiae*) and Group II (*Streptococcus dysgalactiae*) are the most important. Among 2,010 strains obtained in pure culture from newly infected udders 1,245 belonged to Group B and Group II and eight to the Group C (*Streptococcus pyogenes animale*).—M. E. R.

ANON. (1943.) Vacunacion anticarbunclosa de los cerdos. **[The question of exemption of pigs from compulsory vaccination against anthrax.]** 1*er Congr. Méd. vét. Prov. B. Aires*, 1943. pp. 57–63. **2181**

At the first congress in the Argentine, the Association of Pig Breeders attempted to get support for exemption of pigs from compulsory vaccination against anthrax, on the grounds that pigs were not disseminators of the disease. The proposal was recommended to the Chamber of Deputies, which is studying a project for compulsory vaccination in all susceptible animals.

—H. G. ARAMBURU.

SMYTH, H. F., & HIGGINS, W. D. (1945.) **Anthrax in the United States, 1939-1943.**—*Amer. J. publ. Hlth.* **35.** 850–858. **2182**

This article is of a general nature, particular attention being paid to cases among tannery and textile mill workers. As far as control of the disease in animals is concerned, the authors criticize the regulations of the U.S. Bureau of Animal Industry with regard to the sterilization

of imported bone meal as being inadequate for the destruction of anthrax spores. They also consider that their regulations for imported hides and skins are responsible for a sense of false security in tanneries.

There was an increase in the total number of human anthrax cases during 1939–43 of 16% as compared with the previous five-year period. There was a five-fold increase in anthrax due to imported wool and hair and in the opinion of the authors this increase could have been prevented by the establishment of a State disinfecting station for imported hides and skins, similar to that which has operated in England since 1921.

—D. L. HUGHES.

TOTIRE-IPPOLITI, P. (1942.) Ulteriori ricerche ed osservazioni su alcuni ceppi di pseudotubercolosi microbica: comportamento sierologico e lunga sopravvivenza. **[Recent researches on pseudotuberculosis organisms. Serological behaviour and survival time.]**—*Nuova Vet.* **20.** 132–135. **2183**

Cross-agglutination tests proved that a strain of *Past. pseudotuberculosis* obtained from an experimental g. pig and two old strains obtained from a cat and a rodent [unspecified] were identical. Two old strains obtained from poultry and one from a pheasant gave weaker reactions. All strains were also tested against *S. paratyphi B*, *S. typhi-murium* and *Bact. coli* with negative results. The mammalian strains were fatal to g. pigs in 2–3 days, whether inoculated subcutaneously or intraperitoneally and the avian strains were lethal in 6–7 days.—R. MACGREGOR.

FOSCHI, M. (1946.) Su di un caso di tubercolosi polmonare nel cavallo da bacillo tipo aviare. **[Pulmonary TB. due to avian type bacilli in a horse.]**—*Clin. vet., Milano.* **69.** 33–45. **2184**

A 12-year-old castrate that had been used for serum production was found after slaughter to have miliary TB. of both lungs and spleen. Cultural and inoculation tests proved the causal organisms to be of the avian type.—R. MACGREGOR.

LÁSZLO, F. (1943.) Zur Tuberkulose des Pferdes. **[TB. in horses.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 148–150. **2185**

Lesions in the liver of two tuberculous horses consisted of a centre composed of dense fibrous tissue resembling a fibroma, and a border of productive tuberculous tissue, in which were present a number of eosinophiles. Similar lesions were present on the surface of the liver, and, in one case, in the substance and on the surface of the spleen. Such fibrous lesions were considered to be an expression of a healed tuberculous process. In a seven-year-old tuberculous mare, a productive tuberculous lesion was present in the dorsal wall of the trachea in its upper third, where the lumen was reduced to the diameter of a finger. The spindle-shaped lesion involved all layers of the wall of the trachea. Histologically, there was proliferation of endothelioid cells and fibroblasts, generally in a rather diffuse fashion, but tending to form nodular foci in places.

—E. COTCHIN.

—. (1946.) **Control of bovine TB. in the United States.**—*Publ. Hlth Rep., Wash.* **61.** 1315–1323. **2186**

A detailed summary is given of TB. eradication in the U.S.A. The Tuberculosis Eradication Division of the Bureau of Animal Industry, U.S. Department of Agriculture, first tested cattle in 1917, finding that 3·2% reacted. The percentage decreased until 1943, when it was 0·18%; it rose slightly in 1944–45, but dropped again from 0·24% in 1945 to 0·23% in 1946. After 25 years of control work all counties and territories were modified accredited free areas, that is, in so far as infection of cattle is concerned. Since 1925, the Department has been working on swine and poultry by testing herds and flocks free of charge.

Useful tables are included showing the scope of the work and the practical results obtained in cattle, swine and fowls. The report is largely statistical.—D. S. RABAGLIATI.

STURMAN, M. (1946.) **[The spread of TB. in domestic animals in Palestine.]**—*Refuah vet. Palestine.* **3.** 19–24. [In Hebrew: abst. from English summary.] **2187**

S. summarizes the results of a survey of the spread of TB. in Palestine, made from tests carried out by the Government Veterinary Department in 1927 and 1936, reports from abattoirs and tests made by veterinarians in various districts.

The facts emerging from a comparison of the findings with data known about other countries are as follows:– (1) TB. is rare in Palestine in horses, sheep, goats, pigs, poultry, dogs and cats. (2) Bovine TB. is less prevalent in Palestine than in most European countries with well developed cattle industries, the proportion of TB. in cattle being 13%. (3) The disease is becoming more prevalent. (4) In settlements where conditions favour its spread, all the cattle are fairly equally infected, with variations according to breed, age and pedigree.

Factors contributing towards the spread of TB. in cattle are intensive farming, over-crowding of cows and calves together and insanitary conditions. Milk and meat from diseased cattle infect human beings, especially children.

Every effort should be made, in the interests of agriculture and public health, to improve

conditions necessary for the raising of high-grade cattle free from TB.

URBAIN, A., & NOUVEL, J. (1946.) Nouveaux cas de tuberculose observés sur des mummifères sauvages entretenus en captivité: loutre de France (*Lutra lutra* L.), raton laveur (*Procyon lotor* L.) et gerbille (*Gerbillus gerbillus* Olivier). **[TB. in captive wild animals (an otter, a raccoon and a gerbil).]**—*Bull. Acad. vét. Fr.* **19.** 183–186. **2188**

After briefly discussing the susceptibility to TB. of wild mammals in captivity, the authors suggest that this is the first record in an otter, a raccoon and a gerbil.

The otter was captured in Brittany in 1943 and was kept in the Zoological Park in the Bois de Vincennes, Paris, from October of that year. This animal first had signs of disease in September, 1945, and died on December 9th of the same year. P.M., the only macroscopic lesion of TB. was one miliary nodule in the right lung. Bacteriological examination of the retro-pharyngeal and mediastinal nodes revealed a few acid-alcohol-fast bacilli, material from which produced typical tuberculous lesions in two inoculated g. pigs. The g. pigs died from intercurrent disease after 18 and 24 days respectvely and this precluded the typing of the strain.

The raccoon had been kept in the same park since February, 1939. No symptoms were noticed, the animal being found dead. The lymph nodes of the thorax were enlarged and infiltrated but had no abscess formation nor caseation. Numerous acid-alcohol-fast organisms were demonstrated from mucus which covered the sides of cavities found in the lungs.

The gerbil was captured in North Africa in 1942. Two months prior to its death it had diarrhoea and became thin. The spleen and liver were found to have a large number of small whitish tubercles. Acid-alcohol-fast bacilli were recovered from abdominal lymph nodes.

The origin of two of these cases was obscure, but in the case of the otter it was thought that the infection was through the alimentary tract, as the animal had been fed on meat unfit for human consumption.—D. S. RABAGLIATI.

FLORIO, R., & SAURAT, P. (1943.) Sur un cas d'iritis tuberculeuse chez le lapin. **[A case of tuberculous iritis in the rabbit.]**—*Rev. Méd. vét., Lyon et Toulouse.* **94.** 164–167. **2189**

The authors could not find a single report of naturally occurring tuberculous iritis in the rabbit. They record one such case in their own experience, the condition being caused by the bovine type of the organism.—L. M. MARKSON.

EBSTEIN, A. (Undated.) Systematische Untersuchungen über das Vorkommen der einzelnen Tuberkelbazillentypen in operativ entfernten Bauchlymphknoten. **[Occurrence of the various types of tubercle bacilli in excised human lymph nodes.]**—*Inaug. Diss., Basel.* pp. 37. [Abst. from abst. in *Biol. Abstr.* Sect. F. **19.** No. 1. 24–25, copied *verbatim.*] **2190**

From 131 mesenteric nodes found to be enlarged at laparotomy, tubercle bacilli were demonstrated in 18. The bovine type of tubercle bacillus was isolated from lymph nodes of two cases.

PETRAGNANI, G., & BARDELLI, P. (1944.) Esperimenti di vaccinazione anti-tubercolare nei bovini con anatubercolina integrale Petragnani. Nota riassuntiva. **[Vaccination of cattle against TB. with Petragnani's "integral anatuberculin".]**—*Clin. vet., Milano.* **67.** 41–52. **2191**

Petragnani's "integral anatuberculin", a dead vaccine, was tested during the war years. Owing to the circumstances it was not possible to follow the history of all the vaccinated calves as completely as would have been desirable, but the authors drew the following tentative conclusions from the results available:–

Given subcutaneously to calves, it does not cause a general reaction, nor does it affect growth or condition. It forms a vaccinal nodule and in the majority of inoculated animals provokes a prolonged allergic state, which can be maintained by re-inoculation every six months. Some subjects fail to develop allergy; others develop only a weak and transient allergy. Allergic animals acquire a marked resistance to TB.; those which fail to develop allergy have no resistance.—I. W. J.

PRIGGE, R. (1945.) Ueber Reindarstellung, Wirkungsmechanismus und Wertbemessung von Tuberkulin. **[Nature of tuberculin.]**—*Schweiz. med. Wschr.* **75.** 63–66. [Abst. in *Amer. Rev. Tuberc.* **54.** No. 1. pp. 20 of absts., slightly amended. Signed: J. GARSTEIN.] **2192**

The antigen-antibody reaction occurs not only *in vivo*, but also *in vitro*, and may be manifest by precipitation in test tubes. This enables more accurate studies to be made. The toxic reaction to Old Tuberculin in the tuberculous patient is an allergic phenomenon. The potency of Old Tuberculin is measured by ability to kill guinea pigs as a result of a dialysable polysaccharide, or by skin reaction. This latter is caused by a non-dialysable substance, which may be precipitated by ammonium sulphate or trichloracetic acid. The protein precipitated by the former chemical has a molecular weight of 32,000, whereas the latter has one of 16,000 and is non-antigenic. This pure protein derivative may be obtained from culture

filtrates with much care and avoidance of heat. A union of the protein with a colloidal substance prevents antigenicity, but the ability to cause a skin reaction is retained. For standardization a tuberculin unit was defined as the active substance in 1/100,000 cc. of Old Tuberculin. In guinea pigs the sensitivity to tuberculin was directly proportional to the duration of infection with tuberculosis. Such a relation has not been shown in human beings.

CHELLE, P. L., UKRAINCZYK-LABORIE, F., & LABORIE, R. (1943.) Note sur la tuberculination intraveineuse chez les bovins. **[Intravenous tuberculin test on cattle.]**—*Rev. Méd. vét., Lyon et Toulouse.* **94.** 97–112. **2193**

Ten bovines, negative to subcutaneous and intradermal tuberculin tests were injected intravenously with 4 ml. of subcutaneous tuberculin. There was no response. Six advanced TB. cases which had been repeatedly subjected to subcutaneous and intradermal tests all reacted to intravenous tests although the other two tests often had doubtful results. In ten doubtful cases six animals responded to the intravenous test unmistakably.

The intravenous reaction starts 1–3 hours after injection and reaches its peak after 9–12 hours, disappearing after 18 hours. The temperature may be up by 3°C. at the peak, but, if the animal has been frequently submitted to tuberculin testing, it may only rise 1°C.

—R. MACGREGOR.

LASSERRE, R., UKRAINCZYK-LABORIE, LABORIE & PUGET. (1942.) Eczéma végétant sous-ongulé des solipèdes et allergie tuberculinique. **[Canker of the hoof of solipeds and tuberculin allergy.]**—*Rev. Méd. vét., Lyon et Toulouse.* **93.** 97–99. **2194**

After a brief historical review of the literature dealing with canker of the hoof in horses, the authors cite literature suggesting that the condition may be related to the presence of an allergic sensitivity of the tuberculin type. Eleven affected horses were subjected to cutaneous, intracutaneous, subcutaneous and intravenous tuberculin tests. Two of the animals gave positive reactions to all the tests, while the others had indefinite reactions. The authors consider that further work along these lines might prove instructive.—J. LOCHIEL MCGIRR.

ANDENAES, D. M. (1945.) **Tubercle bacillus allergy in tuberculin anergetics.**—*Acta tuberc. scand.* **19.** 211–230. [In English: author's conclusion copied *verbatim.*] **2195**

All tuberculin-tested who reacted positively to Mantoux 10 mg. or smaller doses showed a "different reaction" to probatory inoculation with B.C.G. A "different reaction" was also seen in some persons (8 out of 11) who reacted negatively also to Mantoux 10 mg.

This investigation has demonstrated in man the occurrence of a tubercle-bacillus-allergy without hypersensitivity to tuberculin. Whether this mode of reaction is congenital or acquired cannot be decided from the present material. Probably, however, the group consists of tuberculosis-infected individuals who have lost their tuberculin hypersensitivity, but have retained bacillus-allergy. It is no unreasonable idea that allergy persists more tenaciously against the whole bacillus than against an extract from it.

This experiment may indicate that negative reactors to tuberculin constitute no homogenous group of non-infected, but a group composed by non-infected as well as infected who have lost their tuberculin hypersensitivity.

Concerning immunity in this group the experiments do not prove anything with certainty. But it is reasonable to think that individuals who react so characteristically to the bacillus of Calmette and Guérin will also react differently from non-infected when exposed to a virulent infection. It really does not seem probable that in case of infection they will react with primary complex formation but, at least to some degree, show reinfection immunity. Immuno-biologically the reaction mode of these individuals corresponds to the phenomenon of yatergia which is advanced by BIRKHAUG [see *V. B.* **10.** 599] from animal experiments.

CORPER, H. J., & STONER, R. E. (1946.) **An improved procedure for the diagnostic culture of mammalian tubercle bacilli.**—*J. Lab. clin. Med.* **31.** 1364–1371. **2196**

A 10% concentration of $Na_3PO_4,12H_2O$, equivalent to 23% of the chemically pure hydrated salt, was as effective as 3% NaOH or 5% oxalic acid in destroying contaminating organisms in tuberculous material. Trisodium phosphate had the additional advantage that it was apparently without effect on the viability of *M. tuberculosis* after two weeks at room temperature and one at 37°C.

For sputa it is recommended that the specimen be treated with phosphate for two days at room temperature or one day at 37°C. and neutralized before it is sown on to suitable medium. Human faeces were fairly effectively sterilized after one week at 37°C.; in most instances phosphate was more efficient than either NaOH or oxalic acid. Micro-organisms such as *Penicillium notatum* and *Actinomyces griseus*, are more difficult to destroy and a combination of phosphate and oxalic acid may be required.

—R. E. GLOVER.

SIGURDSSON, B. (1947.) **A specific antigen recovered from tissue infected with *M. paratuberculosis* (Johne's bacillus). III. Further studies on the nature of the antigen and on methods for demasking it.**—*J. Immunol.* **55.** 131–139. [For part II, see *V. B.* **17.** 177.] **2197**

Previous papers have shown that the complement-fixing antigen in dried intestinal mucosae from infected sheep is masked by an antagonistic substance. Further experiments on the liberation of the antigen have shown that if the powder is first extracted at pH 4·5, the masking substance appears to pass into solution, whereas the specific antigen is insoluble. Further treatment at pH 9·0 increases the subsequent yield of antigen when compared with preparations not extracted with acid. In most cases treatment at 100°C. for one hour is the most effective.

The disintegration of the powder in a ball-mill instead of a mortar gives greater amounts of the antigen provided the grinding is limited to 12–24 hours and about 10–15 g. of powder are treated.

—R. E. GLOVER.

LINHARES, H. (1943.) Possibilidades de transmissão e vias de inoculação da lepra murina em ratos e outros animais. [**Transmissibility and inoculation routes of rat leprosy in rats and other animals.**]—*Mem. Inst. Osw. Cruz.* **38.** 321–351. [English summary.] **2198**

L. reviews the routes by which natural and experimental rat leprosy may be induced. Lice found in rats dying of leprosy were found to be infected with acid-fast bacilli, but these could not be cultured in Löwenstein medium. Rats could be infected *per os* with a suspension of infected tissue, and both chicks and pigeons could be infected by inoculation in the chest muscle. The intraperitoneal and gastro-intestinal routes were successful in chicks but not in pigeons, which were, however, infected afterwards by intravenous inoculation. In fowls, ducks, chicks and pigeons the lesions were severe and were not as disseminated and numerous as in the rats.—H. G. A.

OTTOSEN, H. E. (1941.) Om Rendyrkning af Corynebacterium Magnusson-Holth fra forurenet Materiale. [**Pure culture of Corynebacterium Magnusson-Holth from contaminated material.**]—*Maanedsskr. Dyrlaeger.* **53.** 139–142. **2199**

Cultures were made from 150 submandibulary lymph nodes secondarily infected with other bacteria. *C. magnusson-Holth* were found microscopically in 110 of the glands. Dilutions were made in agar containing 0·0075% sodium tellurite and also in common agar after the material had been treated with 5% sulphuric acid for 10–15 min. The plates were incubated at 37°C. for 48 hours and kept for 3–4 days at room-temperature. It was found that treatment with the sulphuric acid gave 10% more positive results than the tellurite agar plates; the colonies were generally visible earlier in the common agar plates.

—H. C. BENDIXEN.

ANON. (1946.) **A hemolytic *Corynebacterium* resembling *C. ovis* and *C. pyogenes* in man.**—*Bull. U.S. Army med. Dep.* **5.** 518–519. **2200**

A description is given of the haemolytic corynebacterium frequently found in nasopharyngeal or cutaneous lesions in the Pacific Islands and similar to a large group of haemolytic corynebacteria, such as *C. ovis* and *C. pyogenes.* Morphologically, this organism resembles *Corynebact. diphtheriae*, but it produces extensive haemolysis on fresh blood medium. Intracutaneous inoculations are not neutralized by diphtheria antitoxin. It has low pathogenicity for man.—A. M. H.

I. HOLT, L. B. (1947.) **Purified precipitated diphtheria toxoid of constant composition. (P.T.A.P.)**—*Lancet.* **252.** 282–285. **2201**

II. BOUSFIELD, G. (1947.) **Clinical trials of diphtheria toxoid aluminium-phosphate-precipitated. To determine optimal aluminium-phosphate content.**—*Ibid.* 286–288. **2202**

A purified formol-toxoid was obtained from potent diphtheria toxin prepared in Mueller's simple casein medium. Solutions of the toxoid were satisfactorily stable and full activity could be preserved by freeze-drying. The addition of aluminium phosphate successfully precipitated the antigen and produced a diphtheria prophylactic free from the disadvantages of alum-precipitated toxoid. It was possible to inject g. pigs with a constant dose of toxoid together with an increasing amount of the mineral carrier, and it was shown that the antitoxin response increased, as the amount of aluminium phosphate per unit of toxoid was increased up to the optimum relative proportions.

Groups of children were given one, or if necessary two injections of the purified toxoid (5Lf) together with varying amounts of aluminium phosphate. The efficacy of the toxoid-precipitates was judged by the Schick-conversion rate, which improved as the mineral content of the mixtures was increased up to about 5 mg. aluminium phosphate. No troublesome reactions resulted from subcutaneous injections. It was noted that the following readings ran in parallel :– the amount of mineral carrier injected, the degree of nodule-formation and the Schick-conversion rate. When a group of such antigens was being examined, it was more instructive to test the response from a single injection, than that from two spaced doses.

—J. KEPPIE.

CARTER, H. S. (1946.) **Microbic dissociation in *C. diphtheriae* by the production of daughter colonies.**—*J. Path. Bact.* **58.** 391–398. **2203**

Of 1,000 positive throat cultures examined, 14 strains were observed which on unheated blood tellurite medium appeared to be of the *intermedius* type, but which fermented starch like the *gravis* type and produced papillary daughter colonies. Subcultures from the papillae gave large colonies of typical *gravis* type appearance which bred true. Starch was fermented not only by these variants, but also by persistently *intermedius*-type-like colonies without papillae. A true non-starch-fermenting *intermedius* type could not be isolated even by simple cell culture.

In a comment on p. 396, J. W. MCLEOD suggests as a possible explanation that these strains might be atypical *gravis* type strains, which share with the *intermedius* type a metabolic peculiarity responsible for both the restricted growth on the blood tellurite medium and the green colour on heated blood agar; daughter colonies might be variants which, on shedding this peculiarity, return to the normal form.

—A. MAYR HARTING.

VALLÉE, M. (1946.) Sur la vaccination active du porc contre le rouget. [**Active immunization against swine erysipelas.**]—*Bull. Acad. vét. Fr.* **19.** 187–189. **2204**

The author describes his research over a period of seven years. He attempted to attenuate the organism by cultivation of many different strains in contact with an antiseptic, using not pure trypaflavine [3,6-diaminomethylacridinium chloride known also as gonacrine] employed by previous workers, but a mixture of trypaflavine and the chlorhydrate of 3,6-diaminoacridine. This mixture gave better results than pure trypaflavine. Good conditions for his experiments were difficult to obtain and the susceptibility of the pigs used differed greatly.

Lots of three pigs, weighing 24–50 k. were given 1–5 ml. of living attenuated vaccine 5 ml. being tolerated without any thermal reaction or clinical signs. Twenty-four days later the vaccinated pigs received 5 ml. of 24-hour-old virulent culture of swine erysipelas bacillus and gave no signs of infection, whereas control pigs all had high temperatures, along with clinical signs of disease. V. considers that pigs will withstand doses of 5 ml. of the vaccine and that 1 ml. gives excellent immunity. He recommends that vaccination with the single dose of attenuated culture be confined to those cases where the economic life of the pig is short and where there is no severe outbreak of disease present. In severe outbreaks the method of Leclainche which has stood the test of 40 years and gives immediate immunity, should be practised.

—D. S. RABAGLIATI.

POPPE. (1943.) Rotlauf als tierärztliche Berufskrankheit. [**Erysipelas as a veterinary occupational disease.**]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* August 20th. 281–283. **2205**

Infection with *E. rhusiopathiae* appears to be the commonest occupational disease of veterinary surgeons in Germany and neighbouring countries, where live cultures are used on a large scale for the vaccination of pigs. The infection is usually contracted from a puncture with the syringe needle or with a piece of glass from a broken vaccine ampoule. P. describes the disease as seen in man, discussing symptoms, diagnosis, and treatment. He states that the sulphonamide "Ciba 3714" [sulphonamidothiazole] has been reported to be effective [for treatment with penicillin, see *V. B.* **17.** 219]. He stresses the need for care when vaccinating pigs, and suggests that a rubber-stoppered container for the vaccine would be safer than a glass ampoule. He considers that the disease in man should be made notifiable.—E. COTCHIN.

POTHMANN, E. (1944.) Listerella-Infektionen bei Schafen und Hühnern in Ostpreussen. [*Erysipelothrix* (*Listeria*) **infection of sheep and poultry in East Prussia.**]—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 127–129. **2206**

The disease which was eventually diagnosed as *Erysipelothrix* infection [see *V. B.* **17.** 7, abst. 28] was observed in East Prussia in December, 1940, in three sheep in a large flock.

Affected animals had loss of appetite, head turned to the left and movement leftwards, and death in 3–4 days. There was no macroscopic change in the brain, but round cell infiltration around the blood vessels and ganglion cells could be seen in histological sections. Bacteriological examination of these and of a further case gave negative results, but in 1942 *Erysipelothrix* was successfully isolated from three similar cases. A case of this infection in a fowl was also encountered.

In order to verify the diagnosis many experimental infection tests were carried out on mice, rabbits and fowls and Koch's postulates could be fulfilled. Attempts were made without success to develop a diagnostic agglutination reaction, but the work could not be completed.—J. E.

BELIN, M. (1946.) La listerellose équine. [*Erysipelothrix* (*Listeria*) *monocytogenes* **infection in horses.**]—*Bull. Acad. vét. Fr.* **19.** 176–181. Discussion p. 182. **2207**

B. pointed out that hitherto three animals

have been thought immune to listeriasis, *viz*, the horse, the dog and the cat. In January, 1946, however, he came across three horses affected with this disease. Three healthy in-contact horses were given a formolized vaccine of the organism and remained healthy. The symptoms in the three naturally affected horses, all of which died, are described; they resembled those seen in the ox, sheep and pig. *Erysipelothrix monocytogenes* was isolated from the lesions.

In discussing the clinical diagnosis, B. pointed out that in man, meningitis predominates in this disease, whereas in the horse, it is encephalitis. The disease was unknown to France before the war and B. looked upon its present frequency as disquieting.

In the discussion which followed, FORGEOT pointed out that B. had by no means proved the occurrence of the disease in the horse and cited two instances in which diagnosis was difficult.

—D. S. RABAGLIATI.

KRAGE, P. (1944.) Listerella-Infektion bei Fohlen. [*Erysipelothrix* (*Listerella*) **infection in foals.**]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* January 21st. 30–31. **2208**

Two cases of listeriasis in foals are described for the first time in Germany. Both animals became paralysed and died within a few days of birth. In the first case, the only lesion found P.M. was an enlarged liver with foci of necrosis, but in the second there was in addition to liver necrosis, acute gastro-enteritis and septic nephritis. *Erysipelothrix* was isolated from the heart blood and organs.—I. W. JENNINGS.

JEPSEN, A. (1942.) **A case of** *Erysipelothrix* (*listerella*) **infection in lamb.**—*Acta path. microbiol. scand.* **19.** 423–432. [In English: author's summary copied *verbatim.*] **2209**

On autopsy a lamb presented multiple necroses of the liver. From the necrotic processes in the liver and from the spleen a bacterial strain was isolated that on thorough examination proved to be identical with Listerella monocytogenes.

SAPRE, S. N. (1945.) **Transmission of pasteurellosis by the fleas** (*Ctenocephalides felis*).—*Indian J. vet. Sci.* **15.** 151–155. **2210**

Past. septica infection was transmitted in 12 out of 15 experiments in which 450, 200, 75, 61, 34, 25, 16, 14, seven, five, four and two fleas were placed on healthy rabbits 6–48 hours after feeding on infected rabbits. In the other three experiments, 250, seven and one infected fleas failed to transmit the disease.

In 11 experiments on buffalo-calves, 160–3,000 infected fleas failed to transmit the disease. In all the experiments except one rabbits were used as donors because of the difficulty of collecting fleas after the death of buffalo-calves. Flea faeces collected 24 hours after the flea had fed on an infected rabbit and placed on a flea-bitten area in a rabbit, caused fatal pasteurellosis in 24 hours.

Bacteriological examination of 34 samples of infected fleas, 1–120 hours after fasting, yielded 15 positive results. Most of them were positive 24–48 hours after fasting, while one was positive after 112 hours.—K. C. SINHA.

IYER, S. G., & HASHMI, Z. A. (1945.) **The occurrence and spread of fowl cholera in India.**—*Indian J. vet. Sci.* **15.** 157–160. **2211**

The disease is infrequent and does not take the form of a widespread epizootic. In one outbreak among 2,000 fowls which lasted for a month in midsummer, 11 died. Blood agar plating of nasal swabs from fowls in both affected and unaffected pens revealed carriers soon after the outbreak and again 21 months later. The carrier-route was just over 5 per cent. Colonies were of the "blue" type but varied much in virulence.—G. L. S.

TSAREVA, M. I. (1945.) Vodnaya vspyishka tulyaremii. [**A water-borne outbreak of tularaemia.**]—*Zh. Mikrobiol., Moscow.* No. 7–8. pp. 48–50. [Abst. in *Bull. Hyg., Lond.* **21.** 307, slightly amended. Signed: D. J. BAUER.] **2212**

A description is given of an outbreak of tularaemia in a settlement, characterized by fever, sore throat and cervical adenitis. The occurrence of this type of the disease suggested that the infection was water-borne, and this was confirmed by bacteriological examination of the water supply. As the artesian well supplying drinking water had been destroyed during the war, water intended for industrial purposes was admitted to the distributing system. This water was taken from a small river dammed to form a reservoir, which afforded a favourable habitat for water rats, from which the infection probably came. The water was chlorinated in a water tower which was operated only in the day time; at night untreated water entered the supply system.

The outbreak ceased when the supply of infected water was cut off.

LARSON, C. L. (1945.) **The growth of** *Pasteurella tularensis* **in the yolk sac of developing chick embryo.**—*Publ. Hlth Rep., Wash.* **60.** 587–591. [Author's summary copied *verbatim.*] **2213**

P. tularensis grows readily on chick embryos when introduced into the yolk sac. Chick embryos are as susceptible as mice to infection with *P. tularensis*. The concentration of organisms in the tissues and fluids of infected chick embryos approaches that obtained in infected mice.

VERGE, J. (1946.) La tularémie est-elle un danger pour la France? [**Tularaemia in France.**]—*Rev. Path. comp.* **46.** 173–177. **2214**

As early as 1930 it was feared that tularaemia might appear in France and it was still unknown there in 1938, when it was common in European countries further East. The first two human cases, a husband and wife, were reported in March, 1946, in Paris. The husband contracted the disease while skinning a hare from the Touraine, where native stocks had been replenished by pre-war imports of Polish strains. The wife became infected while preparing the meat for cooking.—F. E. W.

REVO, M. V., & NIKOL'SKII, V. V. (1942.) O vaktsiniruyushchikh svoĭstvakh glyutsido-lipidnogo kompleksa dobytogo iz kul'tur pasteurella. **[The vaccinating properties of the glucido-lipidic complex produced by pasteurella cultures].**—*Zh. Mikrobiol., Moscow.* No. 1/2. pp. 75–79. [Abst. in *Biol. Abstr.* Sect. F. **19.** No. 7. 38, slightly amended. Signed: H. LEVERNE WILLIAMS.] **2215**

Obtained by a somewhat altered Buavena and Mezrobeanu method from M- and D-form rabbit *Pasteurella* cultures, somatic antigen (glucosido-lipid complex) on second vaccination causes a strong immunization against subcutaneous or intraperitoneal injection of suitable virile cultures of *P. cuniculicida.* This vaccine offers promise of use in raising rabbits. Further study of its immunological and chemical properties is required.

*MACCHIAVELLO, A. (1942.) Pseudo-peste murina con parálisis del tren posterior, nueva enfermedad epizoótica de la rata causada por Klebsiella. **[Pseudo murine plague with paralysis, a new epizootic disease of rats caused by Klebsiella.]** —*Arch. Hig., Rio de J.* **12.** 69–92. [Abst. in *Biol. Abstr.* Sect. F. **18.** No. 10. 36, copied *verbatim.*] **2216**

A paralytic disease of rats is described which can be experimentally reproduced in this species (*R. rattus*) but not in guinea-pigs, in which it shows a different pathological picture. The agent is a *Klebsiella*, possibly a new species, and a relationship is suggested between this micro-organism and other individuals of the family Bacteriaceae isolated from murine epizootics in tropical regions. This work confirms Randall's studies on colony and antigen variation of *Klebsiella.*

JANSEN, J. (1946.) Orchitis bij hengsten, abortus bij merries. (Klinischbacteriologische les over *Salmonella abortus-equi*-infecties). **[Orchitis in stallions and abortion in mares due to *Salmonella abortus-equi* infection.]**—*Tijdschr. Diergeneesk.* **71.** 160–167. [English summary.] **2217**

J. deals with the clinical and bacteriological features of *S. abortus-equi* infection observed in stallions and mares in the Netherlands in 1944.

The disease appears to be common. In stallions the infection was characterized by one or both testicles being swollen, a temperature of 40–41°C. and general symptoms of ill-health. *S. abortus-equi* was isolated in pure culture from the abscesses in the testes and scrotum. The blood serum of three affected animals agglutinated *S. abortus-equi* in dilutions of 1 : 8,000, 1 : 240,000 and 1 : 5,000 respectively while in a suspected case it was 1 : 2,500. As antigen, J. used live organisms in a suspension corresponding with no. 3 of the MacFarland nephelometer. He notes that the serum of healthy horses may cause agglutination in high dilutions and observes that many investigators neglect to state the density of the bacterial emulsion used in their tests. Two of these stallions infected several mares. In mares infection may result from the ingestion of the causal organism.

Prophylactic measures for the control of the disease are discussed, including the inoculation of mares with formolized cultures of 48 hours' growth on agar. J. emphasizes the importance of making bacteriological examination (cultural) of the tissues of various organs for the purpose of diagnosis. It is noted that the maximal agglutination titre is reached only about the 15th day after abortion and that it disappears by the end of three weeks.

In the case of valuable stallions the removal of an affected testicle may suffice to free the animal of infection. Freeness from the disease may be ascertained by repeated agglutination tests and after bacteriological examination of spermatozoa. He operated on two of the stallions and the titre of agglutination dropped after castration. His investigations had not been completed by the time when the animals were taken by the retreating German army.—P. L. LE ROUX.

VELASQUEZ Q. J., & ALBORNOZ, J. E. (1945.) Aborto de las yeguas. **[Equine contagious abortion.]**—*Rev. Med. vet., Bogotá.* **14.** 61–64. **2218**

The authors review equine contagious abortion due to *S. abortus-equi* in Colombia, which is stated to have been imported from the Argentine through an infected thoroughbred mare.—H. G. A.

GLOVER, J. S., & HENDERSON, W. (1946.) **Fowl typhoid. Report of a recent outbreak in Ontario.**—*Canad. J. comp. Med.* **10.** 241–249. **2219**

The chickens affected in this outbreak were about four months of age. *S. gallinarum* was recovered. Droopiness, listlessness and a yellow diarrhoea were the principle symptoms. P.M.,

the liver was swollen and discoloured and had yellowish foci and pin-point haemorrhages. The spleen and kidney were enlarged and pale. Saline suspensions were fatal for chickens and rabbits. Tube and whole blood agglutination tests were conducted on the flock with *S. gallinarum* and *S. pullorum* antigens. The two *S. gallinarum* antigens had 86% and 88% reactors. Variant pullorum antigen detected 53%, standard pullorum antigen, 50% and stained whole blood antigen, 38%. Routine pullorum tests would thus have failed to remove a large percentage of reacting birds.—R. GWATKIN.

MOORE, E. N. (1946.) **Fowl typhoid diagnosed in guinea fowl.**—*Poult. Sci.* **25.** 387–389. **2220**

Fowl typhoid (*S. gallinarum* infection) caused the death of 20 guinea fowl out of a flock of 80. Turkeys and fowls on the same premises were also affected, but ducks and geese, which were allowed free range with the other stock, all remained healthy. In discussing the eradication of fowl typhoid and pullorum disease from flocks of fowls and turkeys, M. stresses the importance of considering guinea fowl as possible carriers of one or both infections.—J. D. BLAXLAND.

IYER, S. G., & HASHMI, Z. A. (1945.) **A note on pullorum disease survey in India.**—*Indian J. vet. Sci.* **15.** 48–49. **2221**

In a survey of the disease among 5,017 adult fowls from farms in eight provinces and one Indian state there were no reactors to the quick agglutination method.—K. C. SINHA.

LINSERT, H. (1944.) Beiträge zu den Geflügelkrankheiten. **[Contributions on diseases of birds.]**—*Tierärztl. Z.* No. 2. pp. 25–26. **2222**

A record of an outbreak of a paratyphoid-like disease in young pigeons in which the causal organism proved to belong to the intermediate group, which is closely related in bacteriology and serology to salmonella, and of the isolation of *E. rhusiopathiae* from a dead goose.—J. E.

HINSHAW, W. R. (1947.) **Salmonellosis of turkeys.**—*Vet. Med.* **42.** 179–181. **2223**

A short discussion on the more recent publications concerning the prevention and control of salmonellosis in turkeys.—J. D. B.

CARLINFANTI, E. (1945.) Osservazioni sul problema diagnostico e tassonomico delle salmonelle dal punto di vista veterinario. **[Diagnostic and taxonomic problems of the salmonella group in veterinary medicine.]**—*Clin. vet., Milano.* **68.** 78–82. **2224**

As most salmonella are potentially pathogenic for man, C. suggests that all meat should be tested with a polyvalent mixture of antigens. This alone would not be reliable but he considered that it would be a speedy and convenient indication. Doubtful specimens could then be given more detailed tests. —R. MACGREGOR.

SUURBALLE, A. (1945.) Fra Kastningsbekaempelsens Omraade. **[Control of bovine brucellosis in Denmark.]**—*Maanedsskr. Dyrlaeger.* **57.** 317–340, 341–388 & 389–419. **2225**

Since it was not possible during the years of German occupation to enforce officially rules for brucellosis eradication, the agricultural organizations, represented by a central committee and several local committees, in collaboration with the veterinary directorate, prepared the rules for a collective brucellosis eradication campaign. When the farmers of a dairy circle decide to work according to those rules and when they have been approved by the veterinary directorate, economic support will be given by the state. The eradication programme was to remain open to new rules and regulations, which might become necessary with the advent of new problems.

In five different areas collective eradication work has been carried through from 4–8 years. On the island of Bornholm, where in 1937 about 33% of 3,818 herds were infected, only 2% contained reactors in 1945. Other areas recorded similar progress, so that eradication throughout the country should be possible. In 496 dairy circles (about 30% of the total number in the country) about 22% of the herds examined contained reactors. 43% of the infected herds contained more than four reacting animals.

State support is given (a) for veterinarians taking blood samples and making laboratory examinations, (b) for examination of first cases of abortion occurring in hitherto apparently non-infected herds, and (c) for administration and supervision of investigation areas. As the attempt at eradication has gone forward, the regulations have been further developed. In 1943 the Dairy Association of Bornholm resolved to carry through regulations aiming at a total eradication. [This was achieved in 1946.] Rules were more rigorous and a lower price was paid for milk from herds not in the scheme. Measures were taken to prevent spreading of the disease through artificial insemination.—H. C. BENDIXEN.

MARTINEZ, C. R. (1942.) Contribución al estudio de la profilaxis de la brucelosis de los bovinos. **[The prophylaxis of bovine brucellosis.]**—*Rev. Med. vet. Parasit., Caracas.* **4.** 19–29. **2226**

788 cows of which 52·91% reacted to the agglutination test and 19·22% had aborted, were vaccinated with an attenuated living culture of *Br. abortus*. Following vaccination the abortion rate was 10·5%.—R. MACGREGOR.

MAZZA, G. (1943.) Alcune observazioni sulla infezione brucellare nella Provincia du Trapani. [**Observations on brucellosis in the Province of Trapani.**]—*Nuova Vet.* **21.** 124–228. [Abst. in *Biol. Abstr.* Sect. F. **19.** No. 2. 41, copied *verbatim.* Signed: M. PANISSET.] **2227**

Undulant fever is frequent among humans in Sicily. In order of importance, goats, sheep, and cattle are responsible for transmission to man. *Brucella melitensis* was isolated in most cases. The author used a special antigen made from cultures grown on placenta-agar (glycerol 4%) for allergic diagnosis of infection in animals. This test gave more positive results than the agglutination test. Consideration is given to the use of this "Melitin-M" in prophylaxis.

BATTELLI, C. (1946.) Ricerca di agglutinine per le brucelle sul siero di sangue degli equini dell'Eritrea. [**Brucella agglutinins in the sera of horses in Eritrea.**]—*Boll. Soc. ital. Med. Ig. trop.* **6.** 93–96. [Abst. from English summary.] **2228**

In tests of blood serum from 157 horses in Eritrea positive reactions occurred in 15% at dilutions of 1 : 100 to 1 : 200.

ZANTINGA, J. T. (1941.) Brucella-Bang infecties bij het paard. Klinische les. [*Br. abortus* **infection in horses.**]—*Tijdschr. Diergeneesk.* **68.** 60–67. **2229**

Z. refers to an increase of *Br. abortus bovis* infection in horses and attributes it to an increase of brucellosis in cattle, noting that, although the clinical manifestations of brucellosis in equines may vary considerably, certain features or combination of features are constant.

The 20 cases described consisted of (a) hygromas at the withers and/or poll, (b) lameness and hygroma at the withers or poll, (c) cases of lameness only and (d) horses with general signs of ill health. The hygromas may develop rapidly and burst or may develop slowly and burst years later, forming fistulas; secondary infections may follow after they burst. Hygromas do not always burst.

Suspected cases of TB. sometimes proved to be cases of brucellosis. In young horses, lameness first in one limb then in another, accompanied by sweating and a rise in body temperature was common. A rise in temperature fluctuating for days between 38·8°C. and 39·5°C. was a constant feature of brucellosis and was not affected by the administration of antipyretics. Regular temperature recording and the serological test are important in diagnosis. The serum of affected animals will agglutinate at 1 : 200 or more. Symptoms of general ill health associated with a stiff gait and sweating suggest brucellosis. The disease has a long course. Prognosis is more favourable in cases in which fistulas form than in cases of lameness. Treatment is symptomatic, and is generally very unsatisfactory.—P. L. LE R.

WILSON, S. G. (1946.) **The incidence of blackquarter in native cattle in the Central Province, Nyasaland.**—*J. comp. Path.* **56.** 269–285. **2230**

Blackleg in cattle due to *Cl. chauvoei* was not diagnosed in Nyasaland previous to 1944. The preceding rainy season had been unusually poor and the pastures became exceptionally bare. During the dry period from October to December, the death rate in cattle due to blackleg was estimated to be as high as 3% in certain areas. Immature cattle less than three years of age were most affected. In some areas, serious losses occurred suddenly and for a short period, whereas in other areas where only certain pastures were infected, a low incidence persisted over a longer period of the year. The records of the cattle population over a period of three years were a valuable source of evidence of losses; they showed that those from blackleg were exceptionally high in the dry season, when 1,000–1,200 cattle died. The increased incidence in the dry season was thought to be the result of ingestion of soil when grazing parched pastures. The annual rise in mortality during the wet season was probably due to tick-borne infections. The value of vaccination as a therapeutic measure could not be fully assessed as in most cases it was undertaken too late to be effective.—J. KEPPIE.

RYFF, J. F., & LEE, A. M. (1946.) **Clostridium infection in range animals.**—*J. Amer. vet. med. Ass.* **108.** 385–388. **2231**

Specimens of muscle from cattle and sheep suspected of having died from blackleg were examined for anaerobes. *Cl. chauvoei* was isolated from the majority of cases either alone or together with *Cl. septicum*, *Cl. welchii* and other common clostridia. It is stressed that *Cl. chauvoei* was difficult to culture and several tests had to be used in diagnosis. The addition of 0·2% sodium thioglycollate to routine media aided growth, and "iron milk" and a medium for detecting hydrogen sulphide proved useful. A rapidly fatal form of *Cl. chauvoei* infection occurred in some flocks of ewes within two days after parturition. Insufficient cases of specific infection occurred in vaccinated animals to warrant any general conclusions as to the efficacy of blackleg immunization.—J. KEPPIE.

TYTELL, A. A., LOGAN, M. A., TYTELL, A. G., & TEPPER, J. (1947.) **Immunization of humans and animals with gas gangrene toxoids.**—*J. Immunol.* **55.** 233–244. **2232**

Alum-precipitated formol-toxoids of *Cl. welchii* (Type A) and *Cl. oedematiens* were prepared with regularity on a large scale.

The two toxoids were tested in a variety of animals and in human beings. They were given separately and in mixtures. Satisfactory responses were obtained, as judged in human beings by the titres of circulating antitoxin and in animals by their immunity to challenge doses of specific but heterologous culture. Useful treatment was a minimum of two spaced doses and in the case of the *Cl. welchii* toxoid especially to a third dose was necessary after an interval of at least three months. The response in mice varied somewhat, but g. pigs gave a more uniform result. Goats were useful in that of all the animals tested they most nearly approached the human being in the extent of their antitoxin response.—J. KEPPIE.

HOTTLE, G. A., NIGG, C., & LICHTY, J. A. (1947.) **Studies on botulinum toxoid, types A and B. II. Methods for determining antigenicity in animals.**—*J. Immunol.* **55.** 255–262. **2233**

A measurable degree of immunity could be induced in g. pigs as the result of a single subcutaneous dose of either fluid, or alum-precipitated *Cl. botulinum* toxoid. Because of marked individual variation, large numbers of g. pigs were necessary for accurate assay. Mice could be used by either of two methods as they gave comparable results, but only alum-precipitated toxoid induced a response in the mouse. The degree of protection following the injection of a fixed dose of toxoid could be tested with challenge doses of toxin of increasing severity. Alternatively, the mice could be injected with a series of dilutions of the precipitated toxoid to determine how little had to be given to confer 50% protection against a constant challenge dose of toxin. Maximum and reproducible results were obtained by a modification of the latter method. The dilutions of the toxoid were made in a solution of casein-hydrolysate and each dilution was precipitated with the same concentration of alum.—J. KEPPIE.

SCHULTZE F., E. S., & CAICEDO A., R. (1945.) Enterotoxemias infecciosas de los ovinos jovenes en Colombia. [**Enterotoxaemia of sheep in Colombia.**]—*Rev. Med. vet., Bogotá.* **14.** 65–69. **2234**

The authors report for the first time in Colombia cases of enterotoxaemia of sheep. They isolated *Cl. septicum*, *Cl. welchii* and *Cl. oedematiens*.—H. G. ARAMBURU.

BREUS, A. A. (1942.) Prodolzhitel'nost' sokhranyaemosti antilennykh svoĭstv v stol stolbnyachnykh kvastsovykh anatoksinakh i minimal'naya sila antigennosti ikh. neobkaodimaya dlya soobshcheniya loshadi immuniteta odnokratnoĭ privivkoĭ v doze 5 cm³. [**Viability of tetanus alum anatoxins and minimal potency needed for immunizing the horse with single 5-ml vaccination.**]—*Zh. Mikrobiol., Moscow.* No. 1–2. pp. 86–90. [Abst. in *Biol. Abstr.* Sect. F. **19.** No. 7. p. 37, slightly amended. Signed: H. LEVERNE WILLIAMS.] **2235**

Alum-precipitated tetanus anatoxin containing 0·5% phenol and stored under ordinary room conditions, in two cases for two years, and in one case for four and a half years, has antigenic properties and is non-toxic for g. pigs and horses. This material is suitable for active immunization of horses with one 5 ml. injection, provided that 1 ml. has sufficient antigenic power to protect g. pigs from the injection of 200 M.L.D. of tetanus toxin.

BENGSTON, J. S. (1945.) **Coccidioidal granuloma.**—*Fed. Vet.* **2.** No. 12. 3–4. **2236**

It is stated that granulomatous lesions caused by the parasitic fungus *Coccidioides immitis* are being encountered with increasing frequency in animals as well as in man in the U.S.A.

The available knowledge of the condition is summarized under the headings history, aetiology, source of infection, diagnosis, P.M. findings, histopathology and the structure of the fungus.

The source of infection is not definitely known but the evidence suggests that man and animals become infected from a common source. Diagnosis is by microscopic examination of pus from abscesses or of sections of diseased tissues. Cultural methods may be used. Animal inoculation is useful, g. pigs developing a fatal generalized infection.

The disease has been diagnosed in cattle and sheep but it is possible that other species of animal are susceptible.

Microscopically the lesions resemble very closely those of TB.—M. C.

BUDDINGH, G. J. (1944.) **Experimental** *Streptobacillus moniliformis* **arthritis in the chick embryo.**—*J. exp. Med.* **80.** 59–64. **2237**

B. describes the lesions in chick embryos resulting from the inoculation of *Streptobacillus moniliformis* isolated from a human case of rat-bite fever. The infection localized in the synovial lining of the joints and appeared to be self-limiting in nature.—D. LUKE.

PELOURO, J. T. (1945.) A anátomo e histopatologia da actinomicose. [**The pathology of actinomycosis.**]—*Repos. Lab. Pat. vet., Lisboa.* **6.** 5–22. [English, French and German summary.] **2238**

A general account of actinomycosis containing no new information.—R. MACGREGOR.

VAWTER, L. R. (1946.) **Pulmonary actinomycosis in swine.**—*J. Amer. vet. med. Ass.* **109.** 198–203. **2239**

The lesions are described as purulo-granulomatous and were found in the lungs, spleen and kidneys. In stained films of pus there were many Gram-positive diphtheroids, curved slender rods and a few club forms, but no branched filaments. Anaerobic cultures from lung lesions on veal liver serum agar plates yielded pure cultures.

The author discusses the role of pathogenic *Actinomyces* in morbid processes. He stresses the difficulties of classification based on cultural characters and the association of *Corynebact. pyogenes* and *Actinomyces* in actinomycotic-like lesions, with reference to the possible confusion that may arise owing to their cultural resemblances. —D. LUKE.

HUDSON, C. B. (1947.) *Aspergillus fumigatus* **infection in the eyes of baby chicks.**—*Poult. Sci.* **26.** 192–193. **2240**

H. describes lesions in the eyes of baby chicks 10–11 days old characterized by the formation of a cheesy pellet underneath the nictitating membrane. The cornea was not visibly affected. Of 15 chicks examined, only one was affected in both eyes; in two there were visible lung lesions. The organism was isolated on beef extract agar plates. It was also found in the eyes of some three-weeks-old chicks in which there was also ulceration of the cornea.—D. L. LUKE.

SARTORY, A., SARTORY, R., & KOCHER, F. (1943.) Une dermatomycose fréquente des veaux causée par une espèce du genre Trychophyton. [*Trichophyton* **ringworm in calves.**]—*C.R. Acad. Sci., Paris.* **216.** 578–579. **2241**

An account of the disease is given, with a description of the lesions and of the organism, as it occurred both in the tissues and in culture. Lesions tended to occur on the skin of the head.

Microscopic examination revealed mycelial filaments, septated relatively little at the beginning of the affection, but later ramified, with masses of mycelial spores in chains. The species belonged to the pure endothrix type, not the ectothrix, as usually expected.

After seven days of culture, pure white circular downy colonies several mm. high were seen; after 37 days, cultures had a powdery appearance. Microscopically there was shown to be a cylindrical septated mycelium with ramifications 1·5–2·5μ in diameter. Sometimes intercalated and terminal chlamydospores could be seen. At the end of 23 days on Sabouraud medium sporulating mechanism of the *Acladium* type could be observed, with aleuriospores implanted perpendicularly on the extremity of the mycelium. On Grigoraki's medium a number of fusiform spores could be observed after 23 days.

As a result of its microscopical and cultural characteristics, the authors classify the fungus in the genus *Trichophyton*, near to *Trichophyton acuminatum*.—S. M. G.

TORRES, C. M., ARÊA LEÃO, A. E., & SALLES, J. F. (1943.) Gastrite espontânea do camondongo e cogumelos do gênero *Geotrichum* Link. [**Spontaneous gastritis in apparently healthy mice associated with** *Geotrichum* **spp.**]—*Mem. Inst. Osw. Cruz.* **39.** 97–103. [English summary.] **2242**

Mice in the Institute appeared to be in good health and were used for experimental work on nutrition. Histological examination of stomach tissue revealed that there was acute gastritis, in five out of 19 examined, associated with the fungus *Geotrichum*.—H. G. A.

HELMHOLZ, H. F. (1945.) **The effect of streptomycin on bacteria commonly found in urinary infections.**—*Proc. Mayo Clin.* **20.** 357–362. [Abst. in *Bull. Hyg., Lond.* **21.** 393–394, copied *verbatim*. Signed: L. P. GARROD.] **2243**

These experiments were all done with the filtered urine of a patient under treatment with 2,000,000 units of streptomycin daily; it contained 1,330 units per ml. Various dilutions of this were inoculated with several strains of five species of bacteria derived from urinary tract infections. When a small inoculum was used, the concentrations of streptomycin required to ensure sterility in 24 hours were for *Bact. coli* and *Bact. aerogenes* 66 units, for *Proteus* 75 units, and for *Strep. faecalis* and *Ps. pyocyanea* 100 units. To kill a larger inoculum of the more resistant of these organisms, about double these concentrations was necessary. The undiluted urine killed the two most resistant in 1 hour.

Streptomycin is thus excreted by a patient receiving a usual dose in a concentration five times as great as that theoretically necessary to overcome any urinary tract infection: it therefore "should prove to be the most useful urinary antiseptic yet developed".

See also absts. **2303** (staphylococcal toxoid); **2335** (streptococci and bovine sterility); **2373** (oxidation in bacteria); **2374-2378** (chemotherapy of various infections); **2379** (penicillin and *Str. dysgalactiae*); **2381** (streptomycin); **2395** (*Microsporon audouini* spontaneous case at puberty); **2396** (disinfectant action of alcohol); **2402** (food poisoning by staphylococci); **2403** (salmonellosis); **2412-2415** (technique); **2421–2423** (TB., contagious abortion, C.B.P.P., mycotic dermatitis and other infections studied in Queensland); **2424** (TB. in British Columbia); **2432** (various infections in Montana); **2433** (contagious abortion, mastitis and other infections in reports of agricultural experimental stations in U.S.A.).

DISEASES CAUSED BY PROTOZOAN PARASITES

BALOZET, L. (1946.) La réaction de déviation du complément après le traitement de la dourine par la méthode de Ciuca. **[The complement fixation test in dourine after treatment with novarsenobenzol.]**—*Bull. Acad. vet. Fr.* **19.** 240–241. **2244**

The complement fixation test was used to estimate the decline of the antibody content of the serum of an Arab stallion after successful treatment by Ciuca's method [two intravenous injections of neoarsphenamine], with the following results :– Before treatment 40 units, five days after treatment 30 units, after nine days 30 units, after 14 days 15 units, after 20 days 10 units, after 27 days 5–10 units and after 126 days none.

—U. F. RICHARDSON.

SAURAT, P. (1946.) La dourine : son existence actuelle en France. **[Dourine in France.]**—*Rec. Méd. vét.* **122.** 289–309. **2245**

At the end of 1945 dourine was detected in the Brest area, probably having been introduced by German army horses brought from Poland or Russia ; investigation revealed that infection was present in nine departments and co-incident infection in Italy tended to incriminate horses from N. Africa.

A detailed description is given of the symptoms of the disease, but it is pointed out that the form in France is atypical, and that oedematous swelling of the genital organs may be the only symptom. The plaque stage may be absent, but the disease usually progresses to paralysis, although mortality is not heavy. After an account of the pathological alterations, diagnosis is discussed, and it is emphasized that oedema of the genitalia is to be regarded with suspicion.

A second part of the article deals with control, it being recommended that in clean areas imported equines should be kept under observations for 1–2 months, and as non-clinical carriers occur, that stallions should periodically undergo complement fixation tests.

In infected areas all equines submitted for breeding should undergo a strict examination and a c.-f. test. Suspected cases negative to tests can be used for artificial insemination, the sperm being mixed with an equal quantity of 1 : 5,000 solution of neoarsphenamine in saline.

Methods of dealing with infected animals are discussed, slaughter being considered too expensive, and castration impracticable for females, apart from the danger of mechanical spread.

Treatment is thought to give satisfactory results, preference being given to neoarsphenamine, and if that fails, to retreatment with antrypol, or atoxyl and tartar emetic.—U. F. R.

KULKARNI, H. V. (1946.) **Equine and bovine surra—its incidence in Baroda State during the years 1944 and 1945.**—*Indian vet. J.* **23.** 233–238. **2246**

There were seven outbreaks of surra in horses and cattle in Baroda during 1944–45. Cattle and camels are said to act as foci of infection. Neosalvarsan and N.A.B. [these are proprietary names for the same substance.] were useful in the early stages, while antrypol (5·0 g. per 1,000 lb., two injections at a 4–6 week interval) gave good results both as curative and prophylactic in horses. Of 165 cases treated with antrypol, 132 were cured and of 61 treated prophylactically, only one contracted the disease. For cattle, tartar emetic was found only to have therapeutic value.—H. S.

VISWANATHAN, G. R. (1947.) **Acute bovine trypanosomiasis in Madras Presidency.**—*Indian vet. J.* **23.** 290–299. **2247**

An enzootic form of surra occurred in certain localities in Madras. Cattle and draught bullocks were more prone to the disease than buffaloes. Infection among canines was noted at two centres. Mortality was 90–95% in acute cases. Incidence coincided with the fly season in June to August and movement of cattle favoured spread of infection. Encouraging results were obtained by use of antimonium tartrate as curative and prophylactic. Antimonium tartrate was contra-indicated in heavy infection : its prophylactic action is doubtful.—H. SINGH.

TORRES, C. M., DE SALLES, J. F., & JANSEN, G. (1944.) Neurite no mal de caderas. **[Neuritis in *Trypanosoma equinum* infection (*mal de caderas*) in horses.]**—*Rev. brasil. Biol.* **4.** 319–322. **2248**

The authors studied the plantar nerves of a horse experimentally infected with *T. equinum*. The whole nerve structure was found to be inflamed, the infiltrating cells being lymphocytes, polymorphonuclear leucocytes and macrophages.

The animal was killed 107 days after inoculation. There was oedema of the prepuce and abdomen and the red cell count had fallen from 6,300,000 to 2,700,000 per cu.mm.

—MILLER WATSON.

*BAHRAMI, D. A. (1943.) Culture de Leishmania tropica dans l'oeuf de poule. **[Cultivation of *Leishmania tropica* in the chick embryo.]**—*C.R. Acad. Sci. URSS.* **40.** 212. [Abst. in *Biol. Abstr.* Sect. F. **19.** No. 2. 46, copied *verbatim.*] **2249**

Successful cultivation of *L. tropica* on chick embryos is briefly reported.

TERIZAN, L. A. (1946.) **The effect of splenectomy**

on avian malarial infections.—*J. infect. Dis.* **79.** 215–220. **2250**

The spleen has been assumed to play an important role in the defensive mechanism of the host and in producing immunity to malarial infections. The data presented by T. show that it plays little or no part in determining the initial reactions of the host to the parasite. The response in splenectomized and non-splenectomized animals to infection with *S. lophurae* and *P. gallinaceum* is similar. The removal of the spleen from chicks with latent infections of *P. gallinaceum* resulted in increased parasitaemia of varying degrees of severity. Once an acquired immunity has been established it is the characteristics of the parasite which determine the importance of the spleen to the maintenance of this immunity.—C. H. S.

ABDUSSALAM, M. (1945.) **Piroplasmosis of the domestic fowl in Northern India.**—*Indian J. vet. Sci.* **15.** 17–21. **2251**

An infection due to *Aegyptianella pullorum* and a haematozoa described by COLES [see *V. B.* **9.** 236] occurred in fowls of Northern India. Two Leghorn chickens, exposed to the bites of *Argas persicus*, developed spirochaetosis on the sixth day and recovered, while on the 14th day their blood contained *A. pullorum* and haematozoa resembling those described by Coles. These were probably transmitted by some agency other than the fowl tick. They were unaffected by soamin. —H. SINGH.

LEWIS, R. L. (1946.) **Blood transfusion in a case of bovine piroplasmosis.**—*Vet. Rec.* **58.** 568. **2252**

After failure of a case of bovine redwater to respond to treatment with " pirevan ", 2 litres of blood from other cattle were collected into a flask containing sulphathiazole, sodium citrate and glucose and then transfused into the jugular vein of the patient. The next day the patient was up and eating and passing normal urine. A relapse occurred 15 days later, but this responded to " pirevan ".—U. F. RICHARDSON.

SHCHEPELEV, K. M. (1943.) K voprosu o sokhranenii Piroplasma caballi v kleshchakh Dermacentor silvarum pri parazitirovanii ikh na loshadyakh, obrabotannykh tripansin'yu. **[Survival of *Babesia caballi* in *Dermacentor silvarum* ticks from horses treated with trypanblue.]**—*Veterinariya, Moscow.* No. 2. p. 32. **2253**

Ticks raised from female *Dermacentor silvarum* collected from two foals which had previously been treated with trypanblue were placed on an animal known to be susceptible to piroplasmosis, but no *Babesia caballi* infection developed. Subsequently infected *D. silvarum* placed on the same animal provoked an acute attack of piroplasmosis with typical clinical symptoms and well marked parasitic reaction. —U. F. RICHARDSON.

PRASAD, B. M. (1946.) **Morphological studies of the blood of hill bulls in health and during acute theileriasis.**—*Indian J. vet. Sci.* **16.** 54–56. **2254**

Methods for red cell and differential leucocyte counts in hill bulls experimentally infected with theileriasis are described. There was slight leucocytosis during the subclinical period and in the clinical stage leucocytes decreased, followed by marked leucopenia with a relative monocytosis until death or recovery. Average counts during the subclinical period were: lymphocytes 54%, neutrophiles 28%, eosinophiles 6%, mononuclears about 8%. During the clinical period the figures were 6%, 2%, 0·5%, and 91·5%, respectively, with decrease in red cells to 3–4 millions per cu. mm. There was no appreciable fall in haemoglobin and no haemoglobinuria. Steck's haematological findings on East Coast fever are quoted in detail.—M. K. SREENIVASAN.

SILVA LEITÃO, J. L. (1945.) Theileriose bovina em Portugal. **[Bovine theileriasis in Portugal.]** —*Repos. Lab. Pat. vet., Lisboa.* **6.** 137–144. [English, French and German summaries.] **2255**

Three cases of theileriasis from different areas which were accompanied by hypertrophy of the lymph nodes, especially the prescapular, slight haemoglobinuria but no jaundice are described. The picture was confused by concurrent infection with piroplasms. Ordinary medicinal treatment or administration of acaprin is usually effective. The author doubts whether the organisms were identical with the African types.—R. MACGREGOR.

LOTZE, J. C. (1946.) **Further observations on the nature of anaplasma.**—*Proc. helminth. Soc. Wash.* **13.** 56–57. **2256**

In calves under treatment with sodium arsenite and acriflavine the protoplasmic material of many anaplasms became arranged as an irregular ring with areas of thickening round a central clear space. This was interpreted as due to the action of the treatment on the protoplasm of the organisms during a process of multiple fission. No evidence was found of the occurrence of binary fission.—U. F. RICHARDSON.

HOFFMAN, H. A., & JACKSON, T. W. (1946.) **Spirochetosis in turkeys.**—*J. Amer. vet. med. Ass.* **109.** 481–486. **2257**

Continuing observations on a spirochaetal infection of turkeys, previously recorded, the authors successfully infected by inoculation 40 young chicks and 32 chick embryos. Two inocu-

lated poults became sick, but organisms were not detected in the blood, although a sub-inoculated chick developed spirochaetosis. One young chick became infected when caged with other infected chicks. Attempts to infect g. pigs, rabbits, mice and rats were unsuccessful.

In inoculated chicks spirochaetes appeared on the second day, and both chicks and poults became listless, symptoms persisting for seven days. Naturally infected turkeys examined during the course of the disease furnished only limited data on lesions; when later the flock was slaughtered, the only lesions were in the livers, a number of which were mottled with light and dark areas. Sections of the light areas revealed a breaking down of liver cells, which appeared as large vacuoles, apparently as the result of fatty changes. All sections revealed small islands of lymphocytic tumours, many of which were closely associated with blood vessels and sometimes appeared to be within the lumen of a vein. The livers and spleens of inoculated chicks were enlarged, often being four times the normal size.—U. F. RICHARDSON.

I. BOLGERT, M., KOLOCHINE-ERBER, B., & NOËL, E. (1945.) Une petite épidémie humaine d'infection à "Leptospira canicola". Premier cas. [*Leptospira canicola* **infection in human beings.**]—*Bull. Mem. Soc. Hôpit. Paris.* **61.** 383–386. **2258**

II. BOLGERT, M., KOLOCHINE-ERBER, B., NOËL, E., & SIGWALT, P. (1945.) Une petite épidémie humaine de "Leptospira canicola". Forme grippale et forme typhoide de la leptospirose. [**An outbreak of** *L. canicola* **infection in human beings. Influenzal and typhoid forms of leptospirosis.**]—*Ibid.* 386–388. **2259**

III. KOLOCHINE-ERBER, B., & COLLOMBIER, M. (1945.) Infections humaine et canine par "Leptospira canicola". Considérations sérologiques et épidémiologiques. [**Human and canine infection by** *L. canicola.* **Serological and epidemiological considerations.**]—*Ibid.* 388–390. **2260**

I–III. These articles deal with an outbreak of *L. canicola* infection involving three men and four dogs. The symptoms in the men varied, one case being characterized by encephalitis, erythema and reduction in arterial tension, the second by pulmonary congestion and the third by diarrhoea and abdominal pain. All three had intermittent fever and albuminuria. The dogs appeared healthy, except that one bitch developed eclampsia at parturition and had some loss of hair. Leptospirae were detected in the urine of one animal.

All the men and animals gave positive agglutination tests for *L. icterohaemorrhagiae* and *L. canicola*, the titre being rather higher for *L. canicola*, but whilst lysis of *L. icterohaemorrhagiae* was feeble, some sera caused complete lysis of *L. canicola* at a dilution as high as 1 : 100,000. A test of saturation of the agglutinins confirmed *L. canicola* infection, and g. pigs inoculated with the canine strain developed immunity to infection with a known *L. canicola* strain. It is claimed that this is the first case of *L. canicola* infection of human beings recorded in France and it is suggested that the movement of dogs from Holland during the war may account for the appearance of the parasite in new areas.—U. F. RICHARDSON.

FREUND, S. (1947.) **Leptospirosis in cattle in Palestine.**—*J. comp. Path.* **57.** 62–66. **2261**

Bovine icterohaemoglobinuria was first noticed in Palestine in 1941 and from then until November, 1943, about 500 cases came to F.'s knowledge. He considers the disease to be of increasing economic importance. Sheep are affected, but losses in them are negligible. Human beings also contract an infection which resembles Weil's disease, cases occurring in veterinary surgeons, butchers and farmers. The causal organism *L. bovis*, differs serologically from both *L. icterohaemorrhagiae* and *L. canicola*.

The epidemiology is not understood, but it is thought that outbreaks are not due to cattle movements and that a carrier, possibly the rat, is involved.

Peracute, acute and chronic forms are described, the first of which occurs during pregnancy, the onset being sudden, with fever, black urine, dark brown mucous membranes, weakness and stasis of the digestive system. The acute form occurs in milking cows, the onset being slow, and the first symptom the milk becoming pink in colour. Blood clots may occur in the milk, which may be reduced to a few drops of a dark viscous fluid. Symptoms of jaundice appear and stasis of the digestive system, but these signs disappear in about two weeks. The chronic form is similar to the acute, but symptoms are less pronounced. Animals may appear to recover, but relapse with a recrudescence of symptoms. In some byres a single cow may have typical symptoms whilst others have digestive disturbance only; usually, however, the blood serum of such animals has a high agglutinating titre for *L. bovis*.

Autopsy reveals enlargement of the liver and a dark brown discoloration of the kidneys which are 2–3 times the normal size. Histopathological examination reveals focal necrosis of the liver and a perivascular cellular infiltration, whilst the kidneys have nephritis affecting the glomeruli and tubules. Leptospira occur throughout the liver and kidneys.

Treatment has not been successful, though penicillin has given good results in man.—U. F. R.

GARDNER, A. D. (1947.) **Agglutination of leptospirae.**—*Lancet.* **252.** 20–21. **2262**

A description is given of a very simple microscopical technique for leptospiral agglutination which avoids the use of killed formolized suspensions of leptospira, which are often difficult to prepare.

The agglutinable suspension consists of a living culture of leptospira 4–7 days old in 12% rabbit-serum water. The suspension should contain ten leptospira, or more, per 1/12 dark-ground oil-immersion field. The serum is used undiluted, diluted 1 : 10 and 1 : 100 with saline solution. A 3 mm. loopful of the suspension is placed on a slide and 1 mm. loopful of 1 : 10 dilution of serum is added. The preparation is examined by dark-ground illumination with 1/12 oil immersion lens. A positive reaction appears during the setting up of the preparation, and consists of the intertwining of leptospira, which progresses to the formation of whorls and balls and finally definite aggregates.

For routine diagnosis, agglutination at 1 : 100 (the dilution described) or over is considered significant; a titre of 1 : 30 is suggestive and indicates a repetition of the test.—U. F. R.

GSELL, O. (1946.) *Leptospirosis pomona*, die Schweinehüterkrankheit. **[Leptospirosis pomona, swineherd's disease.]**—*Schweiz. med. Wschr.* **76.** 237–241. **2263**

G. records the finding of *L. pomona* in 50 cases of human leptospirosis, in most of which there was a history of previous close contact of the patients with swine. In Switzerland the disease in human beings appears to be strictly limited to those areas of the country in which anti-*pomona* agglutinins can be demonstrated in the pigs. The infection in pigs is symptomless and is transmitted to man by means of contaminated blood and urine. In addition to describing the usual course of the disease in man, G. lists the following complications :– iridocyclitis, myelitis, encephalitis, orchitis, diffuse bronchitis, occasionally pleurisy and pneumonia and myocarditis. Penicillin has been used with good effect in the treatment of severe cases. Recovery from the disease confers a strong immunity.—I. W. JENNINGS.

See also absts. **2271** (equine piroplasmosis); **2382** (chemotherapy of *Trichomonas foetus*); **2383** (trypanocides); **2384** (treatment of blackhead in turkeys); **2385** (insulin and bird malaria); **2386** (chemotherapy of *P. gallinaceum*); **2387** (equine piroplasmosis); **2426** (*Trypanosoma congolense*); **2428** (trypanosomiasis in N. Rhodesia); **2430** (*T. equinum*); **2433** (trichomonas, hexamita, anaplasma in U.S.A.).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

FLÜCKIGER, G. (1946.) Internationale Bekämpfung der Maul- und Klauenseuche. **[International control of foot and mouth disease.]**—*Schweiz. Arch. Tierheilk.* **88.** 621–623. **2264**

According to a resolution of the *Office International des Epizooties* in Paris, official representatives of countries known to be producing vaccine for F. & M. disease, *i.e.*, of Denmark, Italy, the Netherlands and Switzerland, met in Berne, on 20th and 21st October, 1946.

Agreement was reached as to the necessity for organizing internationally the production and provision of vaccine and the *Office* was suggested for central administration. The producing countries were to report monthly their reserves available for export. Countries in need of vaccine could apply to Paris for this information. Vaccine would be supplied to foreign countries only by order or recommendation of the local veterinary authorities.

Virus rendered avirulent by adsorption on colloidal aluminium hydroxide and treatment with heat and formol was to be used as vaccine. The vaccine was to be bivalent: types O and A Vallée (A and B Waldmann).

A minimum of 260,000 litres of vaccine per year could be prepared for export, sufficient to immunize at least 5,200,000 adult cattle, but vaccination could only be successful if carried out along with other local veterinary control measures. —P. SASSE.

DONATIEN, A., & GAYOT, G. (1946.) Détermination d'un virus Algérien de fièvre aphteuse. **[Foot and mouth disease. An Algerian strain of virus.]**—*Arch. Inst. Pasteur Algér.* **24.** 44–45. **2265**

A strain of virus collected from an outbreak of foot and mouth disease in cattle in the autumn of 1945 was adapted to the g. pig in the Pasteur Institute, Algeria. Material from the tenth g. pig passage was sent to Alfort where Thiéry, by inoculation of immune g. pigs, classified it as belonging to Vallée O type.—W. M. HENDERSON.

MICHELSEN, E., & MIKKELSEN, K. (1945.) **Change of type in the virus of foot-and-mouth disease observed in connection with artificial drying of the virus.**—*Acta path. microbiol. scand.* **22.** 406–414. [In English.] **2266**

Freeze-drying of virus preparations as a method of preservation led the authors to suspect that the process of drying might be producing some change in the antigenic structure of the virus in that g. pigs immune to a particular virus strain proved to be susceptible to the same strain after

it had been dried. Using some remaining batches of dried material, experiments were performed to study this possibility. In one case bovine type O virus behaved after drying as a type A virus and in three cases dried g. pig type A virus on inoculation into O and A immune g. pigs produced a result suggestive of it being an A variant. The authors appreciate the uncertainty of these results, but in view of their nature stress the importance of checking the type of dried material.—W. M. H.

KRISHNAMURTY, D. (1946.) **A note on glycosuria in rabies.**—*Indian vet. J.* **23.** 219–221. **2267**

K. observes that glycosuria is not always a symptom in rabies, as in P.M. collections of urine no glucose, and only traces of albumin were found in one out of 15 cattle and two out of six dogs of different ages and sex.—P. C. GANGULEE.

CORS, G. (1942.) La encefalomielitis en la rabia. [**Encephalomyelitis in rabies.**]—*Bol. Soc. Biol. Concepción.* **16.** 59–71. [Abst. in *Biol. Abstr.* Sect. F. **18.** No. 10. 12, slightly amended. Signed: E. HERZOG.] **2268**

In 18 positive cases of rabies (14 animal and 4 human), a special study was made of the C.N.S., by the Nissl, Bielschowsky-Gros and oxidase methods. A more or less accentuated encephalomyelitis was found in them all. The type of rabic encephalomyelitis is not specific and is very similar to that of epidemic encephalitis; the myelitis also has an aspect resembling acute human poliomyelitis, that is, it is always a question of a polio-encephalitis and poliomyelitis with preferred localization in the grey matter. In accordance with the findings of other foreign authors, the principal attacks are on the bulb of the spinal cord, the mesencephalon, particularly the gray matter, and the hypothalamus, and in a less degree the spinal medulla.

The meninges are rarely affected with an acute discrete and non-diffuse meningitis. The spinal ganglia, the nodoso ganglion of the vagus, and less frequently, the cervical superior ganglion of the sympathetic (Herzog), are also affected. In the peripheral ganglia, the character of the inflammation is often that of a diffuse ganglionitis. The histological alterations consist of marked inflammatory reactions, with hyperemia, and intense perivascular foci composed of leucocytes, lymphocytes, histiocytes and very few plasma cells. These foci are disseminated preferably in the gray matter and invade the parenchyma. The nerve cells present degenerative alterations, up to neuronophagy and complete disappearance which was observed especially within or near the inflammatory infiltrations and even without them. The localization and the inflammatory degenerative character of the process explains very well the clinical phenomena such as peripheral paralysis and bulbar paralysis and also the vegetative phenomena, on account of the predilection for the vegetative centers.

MCGAUGHEY, C. A., & BURNET, F. M. (1945.) **Avian pox in wild sparrows. I. A note on a spontaneous outbreak. II. A note on the activity of sparrow pox virus in the canary.**—*J. comp. Path.* **55.** 201–205. **2269**

The lesions, observed in three wild sparrows found dead in North Wales, consisted of dry blackish crusts at the angles of the mouth and between the branches of the mandible. The virus was passaged by one of the authors in pigeons, cockerels and a pullet and by the other in canaries, which died 12–19 days after inoculation, with a severe disease similar to that produced by the Kikuth (1933) strain of canary pox. Virus was produced in high titre by passage on the chorio-allantoic membrane.—J. B. BROOKSBY.

ANON. (1945.) **Factors determining the incidence of influenza and the interval between repeated attacks in the same person.**—*Aust. J. Sci.* **7.** 137–141. **2270**

The available evidence regarding immunity to Type A influenza is reviewed and it is concluded that specific immunity lasts less than two years after an attack. The mean average period between attacks in the same person is in the vicinity of 20 years. It is concluded that specific immunity is not the main factor in determining the incidence of influenza Type A.—D. F. STEWART.

MURATOV, S. I. (1944.) K diferentsial'noĭ diagnostike infektsiannoĭ anemii loshadeĭ i gemosporidiozov. [**Differential diagnosis of equine infectious anaemia and piroplasmosis.**]—*Veterinariya, Moscow.* No. 11–12. pp. 32–34. **2271**

Attention is drawn to the measure of success obtained in the eradication of E.I.A. in Russia, and the danger of residual infections being mistaken for piroplasmosis and neglected.

For differentiation it is pointed out that piroplasmosis is acute, with death or recovery in a few days, whereas even the acute form of E.I.A. develops slowly, with subacute and chronic forms characterized by remissions and relapses. In piroplasmosis there is intense jaundice and often haemoglobinuria, whilst in infectious anaemia, although the mucous membranes may be icteric, they are more often porcelain coloured and haemoglobinuria does not occur.

In piroplasmosis petechial haemorrhages occur on the conjunctival mucous membrane and the third eyelid, whilst in E.I.A. haemorrhages occur typically on the under surface of the tongue

and on the lips and gums; they may reach 0·1–0·3 mm. in diameter.

In E.I.A. the heart and circulatory system are seriously affected, the heart beat becoming loud, with sometimes noticeable vibration of the thorax and pulse and oedematous swellings appearing on the lower parts of the body.

In mixed infections, or E.I.A. in carriers of piroplasmosis, there may be only one parasite per 50–100 microscopic fields in blood smears and the parasites do not have the typical form. In uncomplicated piroplasmosis there is at least one parasite per field. Specific remedies give quick and lasting results in piroplasmosis, but in mixed infections they have only a temporary effect, or none. Piroplasmosis occurs seasonally, the curve of cases rising quickly to a peak and then ceasing, but in infectious anaemia the curve of cases rises gradually, reaches its peak between June and September and gradually declines.—U. F. RICHARDSON.

CARNEIRO, V. (1944.) Estudos de imunidade cruzada entre o virus brasileiro da encefalomielite infecciósa do cavalo e os virus americanos —pelas provas de soroneutralisação. [**Immunological relationship between the Brazilian and the American viruses of equine encephalomyelitis, through cross-neutralization tests.**]—*Arq. Inst. biol., S. Paulo.* **15.** No. 2. 209–238. [English summary.] **2272**

C. studied a strain of E.E. virus isolated in Sao Paulo, Brazil and by means of cross-neutralization tests compared it with the already known types. The responsible virus was shown to be a variety of the Eastern type. Intraperitoneal injection of a virus-serum mixture into Swiss albino mice was a better test than intracerebral inoculation into g. pigs: it is recommended for Venezuelan and Brazilian strains, which are less pathogenic than the Eastern type.

Eastern serum neutralized the Brazilian virus; previous cross protection experiments had shown that Eastern vaccine regularly protected against the Brazilian type. Furthermore, Brazilian serum always neutralized the Eastern virus. This result was unexpected, since the Brazilian vaccine gave but incomplete and irregular protection against the Eastern virus.

Experiments on cross-neutralization by Brazilian serum of the Western and Venezuelan type viruses on the one hand and by Western and Venezuelan sera of Brazilian virus on the other gave no evidence of any immunological relationship.

The results of these tests should not invalidate those yielded by cross-immunity tests, which can detect slighter differences than serum neutralization. The isolation of new samples and their complete immunological study should clear the question of the predominance, if any, of the Eastern type or variety of this type of virus in Brazil.—H. G. ARAMBURU.

RANDALL, R., MILLS, J. W., & ENGEL, L. L. (1947.) **The preparation and properties of a purified equine encephalomyelitis vaccine.**—*J. Immunol.* **55.** 41–52. **2273**

The observation that inactivated Eastern type virus, prepared by treating suspensions of infected chick embryos with 0·2% formalin, could be sedimented in the Sharples' centrifuge at pH 6·7, but would remain in the supernatant fluid at pH 7·1–7·2, led to the development of a two-stage differential centrifugation process for the preparation of purified vaccine against the Eastern, Western and Venezuelan types of virus. All three types of vaccine injected intradermally were capable of actively immunizing g. pigs against the homologous type of virus given intracerebrally. Tests of a sample of Eastern type virus after storage at 3°–5°C. indicated that the product had good keeping qualities for 3–6 months, but that there was a marked drop in potency after nine months.

There was a prompt and significant rise in the titre of neutralizing antibodies in the serum of g. pigs following intradermal injection of Eastern type vaccine, and a bivalent (Eastern and Western) type vaccine also stimulated the development of neutralizing antibodies in man following two subcutaneous injections.

The purified vaccine contained significantly smaller amounts of egg albumin and globulin and chicken serum albumin and globulin than the vaccines hitherto used for horses and mules or commercial human vaccines, but it is suggested that care should be taken to avoid administration of even the purified vaccine to individual human beings sensitive to chicken and egg proteins.

—E. COTCHIN.

SOTOMAYOR, C. G. (1946.) **A study of the virus of equine encephalomyelitis in Ecuador.**—*J. Amer. vet. med. Ass.* **109.** 478–480. **2274**

S. describes his work from 1942 onwards which culminated in the isolation of the E.E. virus in Ecuador and its identification with the Venezuelan strain. The vectors of infection are believed, on epidemiological evidence, to be mosquitoes.—M. C.

TRAUM, J., & MADERIOUS, W. E. (1946.) **An outbreak of equine virus abortion in California.**—*J. Amer. vet. med. Ass.* **109.** 468–469. **2275**

This outbreak of equine virus abortion occurred in a thoroughbred stud and involved ten out of 21 mares. Diagnosis was based on negative bacteriological tests of the stomach contents, lung,

liver, spleen and rectal meconium of aborted foetuses, the finding of acidophilic intranuclear inclusion bodies in the parenchymatous cells of the liver from each foetus and the occurrence of abortion in two mares 16 and 23 days after intravenous and intramuscular injection respectively of a Berkfeld V filtrate of a 1 : 2 saline suspension of foetal tissues. Disinfection and isolation measures were instituted and the remaining pregnant mares were given 250 ml. convalescent plasma subcutaneously at weekly intervals until their foaling date. Ten mares so treated foaled normally.

—W. M. HENDERSON.

I. NAIK, R. N. (1946.) **Rinderpest and its control in the Province of Bombay.**—*Indian vet. J.* **23.** 203–216. **2276**

II. EBENEZOR, G. (1946.) **Rinderpest in Tanjore District (Madras Presidency).**—*Ibid.* 216–219. **2277**

I. The symptoms, course and complications of rinderpest are given, along with the average mortality for the past 30 years in cattle and buffaloes in different parts of the province. Buffaloes are reported to be more susceptible than cattle. To improve upon the "serum alone" method of prevention, experiments were started in 1932 on vaccination with goat virus of cattle and buffaloes. In all, 14,807 animals, representing all breeds of cattle and buffaloes, were vaccinated; reactions were mild and serviceable immunity endured for over five years. The infection induced by goat virus was not transmitted to unvaccinated animals. Goat virus vaccination introduced since 1935 has proved successful in control and prevention of rinderpest outbreaks. The establishment of rinderpest-free zones is recommended.

II. Annual losses from rinderpest in this district are heavy. After harvest (from mid-January) animals of different owners are gathered for manuring the fields. Rinderpest may thus be spread throughout the herds. Control measures suggested are legislation to make "serum-simultaneous" inoculation compulsory of all animals, using goat virus, and the use of motorized units for prompt attention to outbreaks.—G. L. SHARMA.

HASHMI, Z. A. (1946.) **Rinderpest in Rajputana.**—*Indian vet. J.* **23.** 101–108. **2278**

The greater part of Rajputana, which includes 23 states and Ajmer-Merwara, is free from rinderpest. Factors helping to keep it free are limited movement of livestock within the area, the small number of cattle fairs and the natural geographical barriers. Infection is spread mainly by local movement of cattle along the south-east border. Compulsory vaccination and compensation for animals dying as a result of vaccination are recommended. The estimated cost of compensation with a 0·2% mortality is nearly two lakhs of rupees.—C. SEETHARAMAN.

VIRARAGHAVAN, D. (1946.) **Rinderpest control—impressions of a field worker.**—*Indian vet. J.* **23.** 117–121. **2279**

A brief account is given of the difficulties of a veterinarian engaged in rinderpest work. The advantages of a motorized unit for the purpose are emphasized.—C. SEETHARAMAN.

MUKERJI, A. (1945.) **A case report of bovine encephalomyelitis at the Bengal Veterinary College Hospital.**—*Indian J. vet. Sci.* **15.** 50–51. **2280**

The disease was characterized by restlessness, hyperaesthesia and paralysis, and death after 10 days. Lesions, apparently free from bacteria, were confined to the brain and spinal cord. The disease agent was passed through three generations of animals by subdural or intranasal inoculation, *viz*, through g. pig, bull calf and g. pig, with periods of incubation varying from 15–22 days and death at 16–25 days.—K. C. SINHA.

BAREI, S. (1944.) Alcuni casi di broncopolmonite enzootica dei bovini. [**Enzootic bronchopneumonia in cattle.**]—*Clin. vet., Milano.* **67.** 59–63. **2281**

B. describes some cases of enzootic bronchopneumonia, of unknown aetiology in cattle. He discusses the differential diagnosis between this disease, pulmonary pasteurellosis and bovine contagious pleuropneumonia. Attempts to transmit the disease from one bovine to another by means of parenteral injection of lung exudate from recently dead animals were unsuccessful.

—ISOBEL W. JENNINGS.

SILBER, L. A., & SHUBLADZE, A. K. (1945.) **Louping-ill in the U.S.S.R.**—*Amer. Rev. Soviet med.* **2.** 339–341. [Abst. in *Bull. Hyg., Lond.* **21.** 424–425, copied *verbatim.* Signed: D. J. BAUER.] **2282**

Chumakov and Naidenova [see *V. B.* **16.** 300] described a virus disease in White Russia which was considered to be spring-summer encephalitis, and isolated the virus from *Ixodes ricinus*, not previously known to be a vector of that disease. The present authors have tested this virus by inoculation into sheep, and found that it produced a disease resembling louping-ill and differing from that produced by the virus of spring-summer encephalitis; surviving animals were immune to test inoculations of louping-ill virus.

I. HORGAN, E. S., & HASEEB, M. A. (1947.) **The immunological relationships of strains of contagious pustular dermatitis virus.**—*J. comp. Path.* **57.** 1–7. **2283**

II. HORGAN, E. S., & HASEEB, M. A. (1947.) **The relationship between the virus of contagious pustular dermatitis and a virus isolated from sheep papillomatosis by Selbie.**—*Ibid.* 8–12. **2284**

I. Material from two sheep and one goat affected with contagious pustular dermatitis was obtained from Cyprus. When applied to the scarified skin of Sudanese sheep the scabs produced typical vesico-pustular reactions.

Cross-immunity tests showed that the three strains were closely related. Reciprocal cross-immunity experiments were then carried out with two strains received from England. In general, all the viruses were immunologically identical. In some of the tests, however, the heterologous protection was not complete, suggesting that viruses in this group possessed a common major antigen, but that some of them might contain a minor antigen which accounted for qualitative differences in cross-immunity experiments.

II. A strain of SELBIE's virus [see *V. B.* **15.** 187] was readily transmitted to rabbits producing a papillomatous-like eruption with an incubation period of 29–30 days. Selbie's observation that his virus was not retransmissible to sheep was confirmed. A fresh strain of contagious pustular dermatitis received from England and three Cyprus strains [see I] produced reactions in rabbits, which were particularly severe in the case of the Cyprus viruses, in 3–4 days. Cross-immunity experiments in rabbits showed that there was no immunological relation between contagious pustular dermatitis virus and that of rabbit papillomatosis.

Commenting on these results, the authors consider that Selbie's hypothesis that his virus is a strain of contagious pustular dermatitis with a somewhat different adaptability from that of other strains, is difficult to accept, since it seems unlikely that an ovine virus would, after one passage through rabbits, undergo such complete mutation as to render it non-infective for its original host. An alternative hypothesis is that the rabbit carried some latent virus activated by the inoculation of the original material.—R. E. GLOVER.

—. (1946.) **[Discussion on] The recent outbreak of swine fever in N.S.W.** [Speakers: HENRY, M., WARDLE, R. N., FLOREY, LEGG & MAUNDER.]—*Aust. vet. J.* **22.** 99–101. **2285**

H. describes the origin of the 1944 outbreak, its diagnosis and control.

The first outbreak occurred in Western Australia following the importation of American pig meats and from there was introduced into New South Wales. Diagnosis was confirmed by transmission experiments. Control was effected by quarantine, slaughter and the disinfection of properties. Regulations existing under the Stock Diseases Act 1923–34 N.S.W. were enforced and as the disease was covered by the Swine Compensation Act pig owners were willing to co-operate.

In the discussion which followed, emphasis was placed on the danger of illegally introduced pig meats, on the danger of garbage feeding and on the fact that the virus was found to remain viable in stored carcasses for 500 days.—N. W.

KULESKO, I. I. (1944.) Proizvodstvennyĭ opyt vaktsinatsii svineĭ protiv chumy dvumya vaktsinami razlichnoĭ stepeni oslableniya. **[Vaccination against swine fever with two differently attenuated vaccines.]**—*Veterinariya, Moscow.* No. 7. pp. 18–20. **2286**

Tests at the Ukrainian Institute of Experimental Veterinary Science showed that doses of 20 ml. of Dorset's crystal violet vaccine gave lasting immunity to young pigs against swine fever whilst formol and eucalyptol vaccines gave unsatisfactory results. Dorset's vaccine gave a temperature reaction in unthrifty pigs, but in spite of the reaction the pigs did not spread the infection. The temperature reaction was decreased by a two-stage vaccination, first with a weak vaccine, then two weeks later with Dorset's vaccine. 80–90% of vaccinated pigs withstood a subcutaneous injection of 1 ml. active virus two weeks after vaccination. Immunity appeared to last not less than six months. Vaccine maintained at 15°C. had no loss of activity after nine months.

For further tests two phosphate crystal-violet vaccines were prepared from the normal swine fever virus, (a) being held at 37·5°C. for 20 days and (b) at 37·5°C. for 14 days. Twenty-one young pigs 5–8 months old from a healthy farm were injected with 5 ml. of vaccine (a), followed two weeks later by 30–40 ml. of vaccine (b). Four of the pigs were under-developed with symptoms of chronic pleuropneumonia. Vaccination had no outward effect. Six months later, two recovered and increased well in weight, whilst the others continued to lag in growth.

All vaccinated pigs were moved a month after vaccination to a farm affected with swine fever. Seven pigs were injected with 1 ml. of active virus one month later; three were placed in a large group of infected animals and the remaining 11 were kept four and a half months with a herd simultaneously vaccinated, after which (six months after first vaccination) eight of this group were injected with active virus.

In spite of the fact that this dose was normally lethal, all pigs showed continued immunity. There was some rise in temperature on the fourth day but no loss of appetite and all were back to

normal after ten days. Gain in weight continued throughout the test.

Two pigs injected with 60 ml. of vaccine (b) were kept over four months in close contact with 12 pigs, unvaccinated and susceptible to swine fever, under poor conditions and poor feeding. In spite of their lowered resistance, not one of the 12 had any signs of illness, thus showing the harmlessness of vaccinated pigs in contact with unvaccinated stock.—S. W. SALTER.

BOYNTON, W. H. (1946.) **Preliminary report on the propagation of hog cholera virus in vitro.** —*Vet. Med.* **41.** 346–347. **2287**

Cultures of swine fever virus were successfully carried through 24 generations, the viability of each culture being tested by inoculation of two pigs. Material of the seventh culture passage proved to be infective in a dilution of 10^{-9}. A modification was used of the serum ultrafiltrate method of SIMMS & SANDERS [see *V. B.* **13.** 208]. The medium consisted of 25 ml. of a collodion sac filtrate of serum from a susceptible pig, diluted with 80 ml. of Simms & Sanders' saline solution, sterilized by passage through a fritted glass filter and distributed in 15 ml. quantities in large test tubes, the pH being adjusted with 10% CO_2 to 7·4–7·5. The starting material was a 1 : 4 suspension in the culture medium of red bone marrow from an infected pig, the original inoculum being one drop of this suspension, thereafter 0·5 ml. of culture fluid. The tubes were incubated for three days at 37°C. and then kept at room temperature for a further two days. A second culture series was made with the addition of 1 ml. cysteine solution to each 15 ml. of medium. The presence of the cysteine appeared to stimulate slightly the virulence of the cultivated virus.

Preliminary vaccination experiments had some success with ultra-violet light irradiated culture virus but less with eucalyptol, formalin or crystal violet.—W. M. HENDERSON.

CLARA, I. (1947.) Considerazioni sopra due piccole enzoozie di dissenteria dei suini. **[Two small outbreaks of swine dysentery.]**—*Clin. vet., Milano.* **70.** 22–24. **2288**

C. describes outbreaks of necrotic enteritis in two herds of swine containing 150 and 40 animals respectively. The symptoms and lesions were those usually described for the disease. Bacteriological examinations failed to reveal any micro-organism responsible for the condition. Transmission experiments were unsuccessful. C. claims fairly good results with a preventive vaccine made from formolized intestinal mucosa of animals dead of the disease.—ISOBEL W. JENNINGS.

SHAHAN, M. S., FRANK, A. H., & MOTT, L. O. (1946.) **Studies of vesicular stomatitis with special reference to a virus of swine origin.**—*J. Amer. vet. med. Ass.* **108.** 5–19. **2289**

The spontaneous occurrence of vesicular stomatitis in swine was first recognized in a veterinary biological establishment in Missouri in 1943 [see *V. B.* **15.** 356, abst. 2158]. Horses, cattle and goats on the same premises remained free of the disease. The strain of virus was received by the authors as pads from infected g. pigs, and thence passaged successfully to horses, cattle, swine and g. pigs by the intradermal route, but not intramuscularly or subcutaneously. By suitable experiments, it was shown that the virus was of the immunological type "New Jersey". Intercurrent infection with swine fever appeared to exert only slight inhibitory effect on the progress of vesicular stomatitis infection, when the two viruses were given simultaneously by the intravenous route. Contact infection took place from swine to swine in a pen without bedding, but not in another where straw was provided. Seven swine, which resisted contact infection, were found to be immune to subsequent inoculation on the snout with g. pig, and later, bovine virus of the same strain. Twelve swine convalescent 14–23 days failed to convey the infection to four fresh swine and four swine exposed in the pen from which the convalescents had been removed also remained healthy.

Attempts to infect a total of 63 cattle by the intramuscular route were unsuccessful, although bovine virus was used in 42 of the tests. In 39 cases intramuscular inoculation was repeated with the other immunological type of virus, also without producing the disease. Sixty-one of the cattle resisted a subsequent inoculation of virus on the tongue. Sheep appeared to be non-susceptible on inoculation on the tongue with both types of vesicular stomatitis virus. The authors suggest that the test of susceptibility of cattle by the intramuscular route and of sheep by the intradermal is a useful additional criterion for the differentiation of vesicular stomatitis and foot and mouth disease.—J. B. BROOKSBY.

KASCHULA, V. R., CANHAM, A. S., DIESEL, A. M., & COLES, J. D. W. A. (1946.) **Newcastle disease in Natal.**—*J. S. Afr. vet. med. Ass.* **17.** 1–14. **2290**

This article describes the outbreak of Newcastle disease among fowls in Durban about the end of 1944. There were no unusual features about the outbreak. Mortality was about 95% of the affected birds. Ducks and turkeys remained healthy when exposed to natural infection. The virus survived for less than 14 days in the infected pen and in spite of its highly contagious nature, the authors were struck by the ease with which spread of the diseases could be prevented, pro-

vided there was no direct contact with infection. The disease was confined to the sugar-cane belt of Natal and the prevention of further spread was assisted by a general prohibition on all movements of poultry and poultry products except under permit.—J. D. BLAXLAND.

I. IYER, S. G., & HASHMI, Z. A. (1945.) **Studies on Newcastle (Ranikhet) disease virus. Strain differences in amenability to attenuation.**—*Indian J. vet. Sci.* **15.** 155–157. **2291**

II. IYER, S. G. (1945.) **The susceptibility of ducks to Newcastle (Ranikhet) disease.**—*Ibid.* 165–166. **2292**

I. The authors attempted to attenuate by serial egg-passage three virulent Indian strains of Newcastle disease virus. Two strains were not attenuated after 69 and 32 passages, respectively. The third strain immunized from the 19th to 28th passages but later gave anomalous results.

II. Ducks and ducklings were resistant to Newcastle disease virus. Specific antibodies were not detected in serum from inoculated ducks.

—G. L. SHARMA.

KOMAROFF, A., & GOLDSCHMITT, L. (1946.) **[Preliminary experiments on a modification of the virus of Newcastle disease suitable for fowl vaccination.]**—*Refuah vet. Palestine.* **3.** 11–18. [In Hebrew: abst. from English summary.] **2293**

The authors describe the apparent modification of a strain of Newcastle disease virus of fowls by serial intracerebral passages through ducklings.

Virus modified in this manner by ten passages was injected intradermally into the wattle of fowls which did not develop symptoms of Newcastle disease. Fowls inoculated with modified virus resisted an inoculum of fowl virus which killed the control bird in 4–5 days. Immunity was not fully established until 18 days after inoculation with modified duck virus.

HADDOW, J. R., & IDNANI, J. A. (1946.) **Vaccination against Newcastle (Ranikhet) disease.**—*Indian J. vet. Sci.* **16.** 45–53. **2294**

Various methods employed in the preparation of vaccines against Newcastle disease are compiled under the following heads :–

Gel-adsorbed vaccine :– Attempts to prepare "alumina-gel-adsorbed" vaccine are described. It was observed that the keeping quality of the vaccine was poor and the immunity conferred was not of long duration. *Pigeon-passaged virus* :– Series of passages (101–180) through young pigeons (4–5 months) of a virulent strain of Newcastle disease virus rendered it avirulent for fowls, while the killing power for pigeons was maintained. The casualty rate in a large scale test with this virus has been 12–16%. Healthy fowls do not contract infection when in contact with inoculated pigeons or with fowls undergoing vaccination. *Duckling-passaged virus* :– Though adult ducks are resistant to Newcastle disease, ducklings 1–10 days old are susceptible. A more rapid reduction in virulence of the virus has been attained by a few passages (about five) through ducklings. This attenuated strain is cultured in embryonated eggs, the amniotic fluid constituting the vaccine. The casualty rate in fowls with this vaccine was 3–6%. *Egg-passaged virus* :– On the lines of work published by IYER & DOBSON [see *V. B.* **11.** 604] series of passages of different virulent strains were made in hens' eggs. One such strain showed reduced virulence at the 92nd passage, when a casualty rate of 8·7% was noted. Between 115 and 126 passages the results were uniformly good, the casualty rate being 2½–6%. The optimal interval for proper growth and collection of the virus was 48 hours. Over 100,000 birds of all ages over one month have been vaccinated. Birds undergoing vaccination are infective but the infection so transmitted is "silent" and the disease does not spread. At refrigerator temperature the vaccine remains potent for 3–4 months. Vaccine is diluted at 1 : 500 and inoculated in 0·5 ml. quantities. Immunity develops after 48 hours and is solid up to one year. [The immunity is now known to be serviceable for some two and a half years.]—C. S.

GRANELLI, G. (1945.) Alcune osservazioni sulla pseudo peste dei polli (o.d. laringo-tracheite). **[Observations on "pseudo fowl plague" (avian laryngotracheitis).]**—*Clin. vet., Milano.* **68.** 13–17. **2295**

Birds that had recovered from laryngotracheitis 3–4 months previously were placed in contact with birds in the acute stage. Of the 23 recovered birds 11 developed distinct symptoms and two died with typical signs of the disease P.M. The immunity conveyed by the disease was therefore variable and uncertain. [It appears doubtful whether the disease was laryngo-tracheitis or Newcastle disease.]—R. MACGREGOR.

GIROUD, P., & MARTIN, R. (1946.) Pseudo-rickettsies de la conjonctive du lapin. **[Pseudo-rickettsia in the conjunctiva of rabbits.]**—*Bull. Soc. Path. exot.* **39.** 264–266. **2296**

Giemsa and Machiavello stains were used to differentiate rickettsia-like bodies found on the conjunctiva of rabbits and associated with bacterial breakdown.—S. BRIAN KENDALL.

BEVERIDGE, W. I. B., & BURNET, F. M. (1946.) **The cultivation of viruses and rickettsiae in the chick embryo.**—*Spec. Rep. Ser. Med. Res. Coun.* No. 256. pp. 92. **2297**

This important monograph is a revised and

considerably extended version of that described in *V. B.* **7.** 525. There are now well over 300 references. After an account of the history of the use of the developing egg in virus research, there is a discussion of the advantages, potentialities and limitations of chick embryo methods. An important consideration is that latent viruses appear to be absent from the chick embryo and the entry of unwanted viruses is easily guarded against. As it is known that maternal antibody is found in the yolk, however, the possibility exists that a proportion of embryos may be partially or entirely resistant to some of the commoner avian viruses.

After a description of the development of the extra-embryonic membranes and fluids, the management of the eggs before and during inoculation is dealt with. The various techniques of inoculation available (on to the chorio-allantoic membrane, into the various cavities, intravenously, into the body of the embryo, and on to normal tissues grafted on the chorio-allantois) are described.

In the description of the local lesions on the chorio-allantoic membrane, there is included a statistical analysis of the pock-counting method. The wide variety of factors influencing the susceptibility of the chick embryo to minimal amounts of virus is illustrated.

Viruses of specific veterinary interest that have been studied in the chick embryo include the viruses of cow pox, sheep pox, fowl pox, pseudo-rabies, cat pneumonia of Baker, Newcastle disease, fowl plague, equine encephalomyelitis, louping-ill vesicular stomatitis, infectious laryngo-tracheitis, Rift Valley fever, rabies and blue tongue of sheep. The authors failed to demonstrate the multiplication of the canine distemper virus following various routes of inoculation.

The last section of the report deals briefly with the cultivation of bacteria, protozoa and foreign tissues on the chick embryo.—E. COTCHIN.

See also absts. **2304** (aggl. of red cells by viruses); **2310** (heartwater); **2345** (maternal infection and congenital defects); **2359** (lumpy skin disease in game); **2388** (diramin in treatment of granuloma inguinale); **2389** (E.E. treatment with serum); **3417** (E.I.A. and E.E. in Venezuela); **2425** (rinderpest, Newcastle disease, caprine pleuro-pneumonia in Sind); **2437** (virus as organism).

IMMUNITY

ANIGSTEIN, L., & POMERAT, C. M. (1945.) **Reticulo-endothelial immune serum (REIS). IV. Experimental production of anemia and bartonellosis in rats by inhibitory dosage.**—*Tex. Rep. Biol. Med.* **3.** 545–557. [Abst. in *Bull. Hyg., Lond.* **21.** 338, copied *verbatim.*] [For part I, see *V. B.* **16.** 191.] **2298**

An attempt has been made to determine the biological properties of the reticulo-endothelial immune serum (REIS) *in vivo*, particularly its inhibitory action on the defense mechanism of the host. The albino nonsplenectomized bartonella carrier rat was chosen as an object to investigate the specific action of the REIS. This was done in view of the possibility of suppressing the physiologic function of the spleen which normally keeps the relationship between the host and parasite in equilibrium. In other words, an attempt was made to simulate the surgical removal of the spleen by a "biologic elimination" of the organ in attacking it by the specific anti-serum. The ultimate bartonellosis and anemia in rats treated with REIS served as manifestations of this action.

In the preparation of the specific anti-serum the technique of Bogomolets and Marchuk (1943) was followed in using spleen and bone marrow as antigens for immunization of rabbits. Homologous (anti-rat) and heterologous reticulo-endothelial immune sera (REIS) were used in various series of experiments.

The i.p. injection of 0·5 or 1·0 c.c. of homologous REIS into 16 bartonella carrier rats produced a severe anemia in 11 rats, 6 of which developed an acute bartonellosis, with a fatal issue in 3 of them. The macrocytic, regenerative type of anemia corresponds to that produced in carrier rats by splenectomy.

No hematologic changes could be induced by the use of the same anti-rat REIS in the bartonella-free Wistar rats. For control experiments normal rabbit serum was injected into carrier rats without effect. Negative results were also obtained in using anti-chick and anti-guinea pig rabbit immune serum. It is believed, therefore, that the bartonellosis and anemia produced in some of the rats are due to a specific inhibitory action of the REIS on the defense mechanism of the host.

STRAUS, R. (1946.) **Studies on antireticular cytotoxic serum. I. Introduction and review of the literature.**—*J. Immunol.* **54.** 151–154. **2299**

STRAUS, R., RUNJAVAC, M., ZAITLIN, R., DUBOFF, G., & SWERDLOW, H. (1946.) **Studies on antireticular cytotoxic serum. II. Preparation and titration of the serum and study of its serological properties.**—*Ibid.* 155–162. **2300**

STRAUS, R., HORWITZ, M., LEVINTHAL, D. H., COHEN, A. L., & RUNJAVAC, M. (1946.) **Studies on antireticular cytotoxic serum. III. Effect of ACS on the healing of experimentally**

produced fractures in rabbits.—*Ibid.* 163–177. **2301**

The historical development of anti-reticular cytotoxic serum (A.C.S.) is reviewed in conjunction with a résumé of the experimental and clinical claims of the Soviet investigators who have been working in this field since 1924. The first suggestion that antiserum specific for a particular tissue might prove therapeutically useful appears to have been that made by METCHNIKOFF in 1900. Applying the pharmacological principle that small doses of toxic drugs may stimulate rather than depress and damage, he expressed the idea that stimulation of a tissue might be accomplished by the injection of small doses of antiserum specific for the tissue. His experiments were inconclusive and it was not until 1924 (at the time when the significance and nature of the reticulo-endothelial system was beginning to receive general recognition) that BOGOMOLETS appeared to have confirmed M.'s thesis that the functional capacity of the r.e.s.—"the physiological system of the connective system"—could be kept at an optimum physiological level by the injection of small doses of a cytotoxic serum produced by the injection of antigens prepared from organs rich in r.e. tissue. Since that date Soviet medical literature has abounded in articles on the production and the experimental and clinical uses of A.C.S.

Claims have been made that stimulating (*i.e.*, small) doses of rabbit A.C.S. raise the titre of anti-sheep haemolysins and *S. typhi* agglutinins, that 75% of mice infected with recurrent typhus may be saved by two injections of mouse A.C.S., that stimulating doses of A.C.S. increase the rate of healing of experimentally produced fractures in rabbits, whereas large doses delay union, and that cancer in mice responds to A.C.S. therapy. In man, a favourable response to A.C.S. therapy has been recorded in many local and generalized infections and injuries, including typhus and scarlet fevers, war wounds, frostbite, "acute rheumatism", various inflammatory and degenerative diseases of the eye, polyarthritis, pulmonary abscess and TB., certain forms of cancer, and even schizophrenia. The Soviet workers stress the use of A.C.S. as a valuable adjunct to other accepted methods of disease treatment, rather than as an alternative form of therapy.

S. concludes that in view of the numerous and remarkable claims made for the beneficial effects of A.C.S. therapy a feeling of scepticism is natural, but that because of its potential importance the rationale of A.C.S. treatment and the claims made for its efficacy should be subjected to independent study.

II. Serological studies of a preparation of A.C.S. made according to a technique broadly similar to that used by the Soviet investigators are described. Antigen was prepared by grinding four parts by weight of spleen and one part of bone marrow removed from human cadavers free from cancer and infective disease in 5 vol. of sterile saline, and centrifuging at 1,000 r.p.m. for 5 min. The sera were prepared in rabbits and goats by repeated intravenous injections of progressively increasing doses of the cloudy supernatant liquid left after centrifugation (doses ranged from 1·25–30 ml.). To avoid anaphylaxis the animals were injected every third day. Similar preparations were made by the injection of rabbit tissue into goats and of mouse and rat tissue into rabbits. The A.C. titre was determined by a complement fixation technique.

The peak of antibody production was not reached until the 4th–7th day after the last injection of antigen. The usual titres of anti-human A.C.S. in rabbits were 1 : 640 to 1 : 1,280, while those in goats were 1 : 160 to 1 : 320. Similar results were obtained with the other preparations. The A.C.S. was found to be species-specific and to keep at 4°C. or at room temperature for several months. Haemolysins were not usually present in the sera in titres greater than 1 : 20, but haemagglutinins, which could be removed by selective absorption, were sometimes detected in titres of 1 : 640 or more.

III. Anti-rabbit A.C.S. prepared in goats was used in three successive similar experiments designed to repeat the Soviet work on experimentally-produced fractures in rabbits. The right radius and ulna of the animals was fractured under nembutal anaesthesia, reduced immediately, and encased in splinting material. On the third day after fracture five groups were selected at random:—group A received 0·00125 ml. of A.C.S. intravenously ("stimulating" dose); group B, 0·1 ml. of the same A.C.S. ("depressing" dose); group C, 0·00125 ml. of normal goat serum; group D, 0·1 ml. of the same serum; and group E, no serum of any kind. The fractures were examined by X-ray on the seventh, tenth and 14th day after fracture: thereafter the animals were sacrificed and the bones subjected to macroscopic and microscopic examination and to tests for breaking strength.

The results revealed striking differences between the "stimulated", control, and "depressed" groups and the claim made by the Soviet investigators that small doses of A.C.S. stimulate the healing of fractures in rabbits while large doses depress healing was adequately confirmed. The breaking strength of the healed fractures indicated highly significant differences between each of the groups and its control, while X-ray examination indicated marked differences

as early as the tenth day after fracture, the control groups C, D, and E falling mid-way between groups A ("stimulated") and B ("depressed").
—J. LOCHIEL MCGIRR.

LANNI, F. (1946.) **The specificity of serological precipitation.**—*J. exp. Med.* **84.** 167–180. **2302**

The two phases of serological precipitation usually described are the rapid and specific combination of antigen and antibody molecules and the slower aggregation of antigen-antibody complexes. The forces operating in the second phase may be non-specific and a physico-chemical explanation of the process suffice, as suggested by the classical experiments of BORDET (1896). Another view is represented by the lattice theory of MARRACK (1939), which postulates specific union of antigen and antibody as an essential feature of aggregation.

One type of experiment used in elucidating this problem consists in the mixing of unrelated serological systems to determine if mixed clumps of antigen-antibody complexes are formed, and also to study the influence of mixing on the rate and character of the reaction. L. used the photoelectric turbidimeter and the dark-field microscope in studying such mixtures. The antigens were crystalline hen ovalbumin (EA) and Type-specific pneumococcal polysaccharide (SII), chosen on account of the morphological difference in their specific precipitates with the corresponding rabbit antisera. Turbidimetric observations showed that mixtures of the two systems behaved as the sum of the component systems. The greater part of the turbidity developed within 15 min., which was approximately the time taken for visible precipitation to appear. Study of the time taken for visible particulation in mixed systems showed that interaction between the component systems, as evidenced by increase in the particulation rate, was most marked in the regions of antibody excess, less at optimal proportions and hardly evident in antigen excess. Re-suspension confirmed that the particles of co-formed EA-SII precipitates at antibody excess and at optimal proportions were mixed particles, since no particles typical of SII were found. In antigen excess, two species of particles were formed, suggesting that interaction had not taken place.

Microscopic observation of the precipitative systems during the time before macroscopic flocculation, showed that in the period of 2–5 min. from the mixing of antigen and antibody, particles from $0{\cdot}1$–$1{\cdot}0\mu$ appeared. Aggregation of these particles then became apparent, the initial particles still being visible in the aggregates. It was considered that the formation of the small particles is a specific process: they were called seromicrons. The time of first appearance of these particles appeared to be a constant for the particular system, in the case of EA about 200 sec., and for SII, 100. It has not so far been possible to observe the formation of EA seromicrons in the EA-SII mixtures, since the number of particles of SII is already so great. The aggregation of seromicrons is believed to take place non-specifially.

The process of precipitation may thus be described as the formation of antigen-antibody molecular complexes, which combine with each other and with free antigen and antibody specifically, leading to seromicron formation. As concentration of free molecules and small complexes decreases, aggregation of seromicrons becomes the dominant process, and in suitable physical conditions, precipitation takes place.—J. B. B.

LITHANDER, A. (1944.) **Method of producing purified and concentrated staphylococcic toxoid.** —*Acta path. microbiol. scand.* **21.** 759–763. [In English. Author's summary copied *verbatim.*] **2303**

Purified and concentrated staphylococcic toxoid was prepared from staphylococcic toxin made with the Wood strain by allowing a relatively high concentration of formalin to act on the toxin during warmth for a short time. Immediately detoxication had taken place, the toxoid was precipitated with ammonium sulphate. The precipitate was dissolved and dialyzed.

On the average 56·5 per cent of the antigenic value of the original toxin remained in the purified toxoid.

The toxoid caused the formation of antitoxin when injected into rabbits.

CHU, C. M., & COOMBS, R. R. A. (1947.) **Modification of human red cells by virus action. Agglutination by "incomplete" Rh antibody.** —*Lancet.* **252.** 484–485. **2304**

"Incomplete" antibody differs from other Rh antibodies in that it combines with its homologous antigen, but fails to agglutinate the cells containing the antigen. Treatment of human red cells of appropriate Rh genotype with certain viruses (influenza A, PR 8 strain; influenza B, Lee strain; swine influenza, Shope; Newcastle disease virus, Doyle's strain) modified the red cells, so that when resuspended in saline after the virus had been eluted they were agglutinated with "incomplete" antibody. The strongest and most clear-cut results were obtained with cells treated with Newcastle disease virus. There was a falling gradation of activity of the four viruses in the order Newcastle disease, swine influenza, influenza B, influenza A.—E. COTCHIN.

BIRKHAUG, K., & BÖE, J. (1946.) **Intradermal spread of vital dye in anaphylaxis and bacterial allergy.**—*J. Immunol.* **54.** 107–115. **2305**

The relationship of non-specific factors to the localization of injected antigens in sensitized animals was studied by observing the rate and degree of diffusion of intracutaneously-injected dye in (1) g. pigs sensitized allergically with BCG. and with staphylococcic vaccine, (2) g. pigs sensitized anaphylactically with horse serum, and (3) animals similar to those in groups one and two after specific desensitization. Results indicated that a marked restriction in the spread of dye occurred in groups one and two, that the factors responsible for this restricted spread were active some time before specific skin sensitization had reached its height and that specific desensitization eliminated the capacity to restrict the spread of dye in the skin.—J. LOCHIEL MCGIRR.

BROOM, J. C. (1947.) **Revaccination in adults.**—*Lancet.* **252.** 364–366. **2306**

A series of "displaced persons" were injected with vaccine lymph and with the same material heated at 65°C. for 30 min. (control for protein sensitivity). Information was obtained as to the time of previous vaccination.

"Control" reactions occurred in all groups, even those vaccinated 20 years previously. Three types of specific reaction were recognized, *viz*, typical primary vaccinia with maximum response between the eighth and 12th day; vaccinoid reaction with maximum response between the fourth and seventh day, and immune reaction with response between the second and third days. The relative number of primary vaccinia rose and immune reactions fell with increases in the time after primary vaccination. The proportion of vaccinoid reactions, on the other hand, remained constant at 40–50% at all periods. Detailed data are given in a table.—R. E. GLOVER.

See also absts. **2181** (vaccination of pigs against anthrax); **2191** (vaccination of cattle against TB.); **2192-2195** (tuberculin test); **2197** (tissue antigen in Johne's disease); **2201** and **2202** (diphtheria toxoid); **2204** (swine erysipelas); **2215** (glucido-lipidic antigen from pasteurella); **2217** (vaccine for equine abortion); **2226-2228** (brucellosis); **2232** (gas gangrene toxoids); **2233** (botulinus toxoids); **2244** (c.f. test in dourine); **2262** (leptospira agglutinins); **2264** (F. & M. vaccines); **2270** (influenza); **2272** and **2273** (E.E. vaccine); **2275** (equine virus abortion); **2283** and **2284** (contagious pustular dermatitis); **2286** (swine fever); **2293** and **2294** (Newcastle disease vaccines); **2313** (helminth infections); **2324** (fowl leucosis); **2353** (disease in serum-producing horses).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

TOVAR, R. M. (1947.) **Infection and transmission of brucella by ectoparasites.**—*Amer. J. vet. Res.* **8.** 138–140. **2307**

It was found that ticks, bed bugs and fleas could all be infected with the three species of brucella. Fleas were the first to eliminate brucella in the faeces after an infective meal and bed bugs and ticks were still eliminating the organisms after three months. Only ticks were found able to infect by biting and they were also able to transmit the organisms to the eggs and larvae. One strain of *Br. abortus* from *Boophilus annulatus* and two strains of *Br. melitensis* from *Cimex lectularis* were isolated from parasites collected in the field.—S. J. GILBERT.

SAPRE, S. N. (1945.) **Observations on the life-history of *Haemaphysalis bispinosa* Neumann.**—*Indian J. vet. Sci.* **15.** 47–48. **2308**

H. bispinosa was reared on goats and hill bulls. Its life-history was found to be as follows: oviposition, 7–15 days; survival of female after oviposition, 3–6 days; egg stage, average 30 days; engorgement of larvae, 4–10 days; engorgement of nymphs, 6–12 days and occasionally 15 days; engorgement of adults, 8–12 days. Larval and nymphal non-parasitic periods were 17–25 and 28–34 days respectively at 22°C. Of 153 adults examined, 63 were males and 90 females.—H. S.

EDWARDS, E. E., & ARTHUR, D. R. (1947.) **The seasonal activity of the tick, *Ixodes ricinus* L., in Wales.**—*Parasitology.* **38.** 72–85. **2309**

In South Wales, tick activity continues approximately from March to October, with a quiescent period during July. In Mid-Wales there is some evidence to indicate a single peak of activity, occurring in August. Tick populations on six breeds of cattle were not significantly different. The physiological condition of the host did not affect the level of infestation by female ticks.—G. B. S. HEATH.

ALEXANDER, R., NEITZ, W. O., & ADELAAR, T. F. (1946.) **Heartwater.**—*Fmg S. Afr.* **21.** 548–552. **2310**

In an article for farmers the authors deal at length with the distribution of the disease in the Union, the biology of the tick, *Amblyomma hebraeum*, the susceptibility of cattle, sheep, goat and certain species of antelopes (Springbuck and blesbuck), and the symptoms, lesions, diagnosis, treatment, prevention, control and immunization. Uleron, uleron sodium, sulphapyridine (M. & B. 693) and dagenan have been found valuable in the specific treatment of the disease. Different strains may respond differently to sulphonamide treatment. Young stock up to the age of three weeks are resistant but this resistance declines rapidly and disappears completely by two months of age. Recovery from an attack, either with or without

treatment, confers an immunity which persists for many years and probably for life. It is doubtful whether calves on an infected farm which are not dipped will become immunized. The success claimed by farmers for this method is probably due to their failure to attribute heavy calfhood mortality to heartwater. No practical method of immunization to be applied by cattle owners has as yet been evolved. The inoculation of calves under three months of age with a selected strain of virus propagated in susceptible sheep is recommended. Calves do not usually become infected by this inoculation, but develop a strong immunity. In older animals the reaction is controlled by the use of sulphonamides. This method of immunization is regarded as crude and it is claimed to be reasonably safe only in the hands of a skilled veterinarian.—P. L. LE ROUX.

See also absts. **2210** (fleas transmitting pasteurellosis); **2253** (*D. silvarum* transmitting equine babesiosis); **2282** (ticks and louping-ill); **2421-2423** (arsenic-resistant ticks, pigeon fly, ants, caterpillars, etc., in Queensland); **2428** (tsetse fly control); **2429** (*G. austeni* in Zanzibar); **2443** (insect pests).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

SRIVASTAVA, H. D. (1945.) **A survey of the incidence of helminth infection in India at the Imperial Veterinary Research Institute, Izatnagar.**—*Indian J. vet. Sci.* **15.** 146–148. **2311**

S. reports the widespread occurrence of helminth parasites in sheep, goat, cattle and buffaloes in the Punjab, North-West Frontier Province and Sind. The common parasites found are named.—H. SINGH.

PIGOURY, L. (1943.) A propos d'une "épidémie" de trichinose à Beyrouth (Liban). **[An epidemic of trichinosis in Beirut, Lebanon.]**—*Bull. Soc. Path. exot.* **36.** 88–94. **2312**

Trichinosis has been recognized in the fauna of the Lebanon for about 50 years. With the occupation of Lebanon by French troops in 1940 a market for pork developed and the commercial rearing of pigs on a small scale followed. Most of the herds were kept near Beirut. The first cases were found in a large herd of about 2,000 head. This herd had been fed on abattoir waste and garbage: the latter from time to time contained dead rats. The affected herd was slaughtered off and 15% were found infected. Surveys in other herds however indicate that 1% is about the figure for the whole area.

P. considers that the term epidemic should not be applied to outbreaks of trichinosis and that the condition is not likely to become a public health problem in Lebanon as the vast majority of the population are not allowed, on religious grounds, to eat pork.—D. LUKE.

TRAWINSKI, A. (1946.) La sérologie au service de la parasitologie. **[The use of serological methods in parasitology.]**—*Ann. Parasit. hum. comp.* **21.** 183–198. **2313**

Serological methods originally developed in bacteriological work have more recently been applied to parasitology. With trichinella the degree of muscle invasion largely determines a positive diagnosis when tissue is examined microscopically. Disease in human beings caused by *Cysticercus* invasion of the brain in some phases may give symptoms readily confused with other disease of nervous manifestation, such as syphilis.

Serological methods may in such instances greatly assist diagnosis and in addition from the theoretical standpoint, they are useful as suggesting the production of specific antibodies and as proposing relationships similar to those met in bacteriology. Results obtained in working with serological methods in parasitology depend very largely upon the quality of the parasite antigen, the preparation of which requires considerable technique. Methods of preparing antigens from various parasites such as *Trichinella*, *Cysticercus*, *Echinococcus*, *Fasciola* and *Ascaris* are described. A sterile suspension of the parasite in saline after drying and grinding to a fine powder is prepared. Serum from the animal to be tested is obtained by bleeding from a suitable blood vessel in the usual way and should be used as soon as possible. Tissue extract may also be used.

Experiments to ascertain whether extracts of various parasites could induce the production of specific antibodies were designed with *Trichina*, *Cysticercus*, *Echinococcus*, *Fasciola* and other parasites. Blood samples were tested ten days after the last of a series of injections of extracts prepared in a similar way to the antigen but at greater dilution and without filtration. Results of these experiments showed the production of precipitins able to bring about the characteristic precipitation reaction and demonstrated the high specificity of the various reactions. Accordingly, it is suggested that such serological methods yield an accurate basis for the differentiation of parasites difficult to distinguish morphologically.

Various applications of the method in diagnosis are described. It is stated that the precipitation reaction is obtained about 15 days after experimental infection of rabbits with trichinella and that as few as 100 trichinella worms will produce a positive reaction in the rabbit. A positive test was obtained with the light infection after 50 days and the presence of parasites afterwards confirmed.

An account is given of the effect of X-rays on antibodies.—S. BRIAN KENDALL.

CALLOT, J., & GAYOT, G. (1946.) Etude expérimentale de la survie de "*Fasciola hepatica*". **[Longevity of *F. hepatica*.]**—*Rev. Med. vet. Lyon et Toulouse.* **97.** 249–250. **2314**

Flukes obtained from infected livers and rapidly placed in normal saline lived less than 36 hours. They survived not more than seven hours in liver tissue. The authors conclude that there is little chance of *F. hepatica* remaining alive until the meat reaches the consumer.—S. B. KENDALL.

DAVTJAN, E. A. (1945.) **Comparative susceptibility of molluscs to invasion by larvae of nematodes, causative agents of pulmonary helminthoses in sheep and goat.**—*C. R. Acad. Sci. U.R.S.S.* **46.** 86–87. **2315**

After having examined 33,338 molluscs belonging to 38 species and 45,836 belonging to 51 species exposed to natural and experimental infestations respectively with sheep and goat lungworm larvae, D. found that the aquatic Limnaeidae and Planorbidae were susceptible to *Muellerius capillaris* infestation, whereas the Clausiliidae, Cochlicopidae and Ellobiidae were immune to all lungworms studied. *Synthetocaulus* spp., which prefer molluscs of a dry habitat, *M. capillaris*, and *Cystocaulus nigrescens* appear to have the capacity of selectively invading definite species of snails and in any particular mollusc the higher the rate of susceptibility, the higher the intensity of infection and the shorter the period of larval development, and conversely. D. found that 41 molluscan species were susceptible to *M. capillaris*, 35 to *C. nigrescens*, and 20 to *Synthetocaulus* spp. and that these lungworms had a certain selectivity in respect of ecological groups of snails. He proposes classifying the various molluscan intermediate hosts according to their different susceptibility as (1) obligatory, (2) facultative, (3) subobligatory, in which the nematode larvae show a high degree of invasion (above 35 %) and reach the infective stage, but only after a long developmental period, and (4) mortal, in which invading lungworm larvae fail to find suitable developmental conditions and die without reaching the infective stage.—J. N. O.

ANTIPIN, D. N. (1945.) Paraskaridoz loshadeĭ i bor'ba s nim. **[Control of *Parascaris* infestation in horses.]**—*Veterinariya, Moscow.* pp. 27–29. [Abst. in *Helminth. Abstr.* **14.** 86, slightly amended.] **2316**

The author describes the life history of *Parascaris*, methods of infection and symptoms in infected animals including changes in the blood picture. He advises dosing horses with carbon tetrachloride and carbon disulphide and gives the requisite doses for horses of various ages. To prevent spread of infection, he suggests the sanitary disposal of manure and several other precautionary measures.

See also absts. **2390-2391** (phenothiazine); **2392** (lead arsenate in treatment of *Moniezia expansa*); **2432** (control in sheep in Montana); **2433** (research on various helminths in U.S.A.).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

KULKARNI, H. V. (1947.) **Carcinoma of the horn in bovines.**—*Indian vet. J.* **23.** 370–373. **2317**

In Baroda state, large-horned bullocks, mainly of the Kankrej breed, are commonly affected. The condition is often traumatic in origin and the practice of removing the external layer of the horns of the bull calves predisposes them to injury. Shaking of the head, deformity of the horn and nasal discharge, followed by softening of the horn core and nervous symptoms, are the chief features. Metastatic growths are said to occur in the liver and lungs. Treatment is discussed.—S. P. BERI.

UBACH, F. A., & CLER, G. O. (1943.) Algunos casos interesantes de clinica de la facultad de medicina veterinaria como contribucional diagnostico medico. **[Report of two cases. Epithelioma of the frog of a horse's hoof. Carcinoma of the throat in a dog.]**—*An. Fac. Med. vet., Univ. La Plata.* **6.** 41–59. **2318**

A 12-year-old horse, lame in the off hind leg, was found to be affected with a suppurating, canker-like lesion in the frog, accompanied by metatarsal oedema and slight atrophy of the related gluteal muscles. After death, due to alimentary causes, the lesion was examined histologically. The authors believe that it was an epithelioma, with secondary bacterial infection.

The second part of the article deals with an 11-year-old cross-bred Pomeranian dog, with a throat swelling and a clinical history of lethargy and inappetance. The swelling proved to be due to metastatic involvement of the regional lymph nodes, from a carcinomatous focus in the pituitary. Metastases were also found in the prepectoral glands.—I. W. JENNINGS.

LOEPER, M., & LOEPER, J. (1944.) Les sécrétions internes du cancer du sein. **[The internal secretions of cancer of the breast.]**—*Pr. méd.* **52.** 17–18. [Abst. in *Cancer Res.* **6.** 330, copied *verbatim*.] **2319**

Among 26 women with carcinoma of the

breast, instances of high basal metabolism, hypercalcemia, and functional uterine bleeding were present. Water-soluble extracts of 3 tumors produced a rise in basal metabolic rate in rabbits. Water-soluble extracts of 2 tumors gave rise to hypercalcemia when injected into dogs. Fat-soluble extracts of 2 of 4 tumors had an estrogenic effect in ovariectomized rats.

AHLSTRÖM, C. G., & LINELL, F. (1945.) **Autotransplantation of tarred skin to the anterior chamber of the eye. Experimental contribution to the knowledge of latent neoplastic conditions.** —*Acta path. microbiol. scand.* **22.** 475–492. [In English.] **2320**

The authors transferred to the eye of rabbits fragments of precancerous skin, normal skin and skin treated with non-carcinogenic agents (xylol and turpentine). The proliferative capacity of these various epithelia was then assessed by measuring the size of the transplants. It was found that the precancerous skin grafts were more active and had a more marked epithelial hyperplasia than those of the normal and control (xylol-and turpentine-treated) skin groups. —A. R. J.

LINDGREN, A. G. H. (1945.) **The vascular supply of tumours with special reference to the capillary angioarchitekture.**—*Acta path. microbiol. scand.* **22.** 493–522. [In English; German summary. English summary copied *verbatim.*] **2321**

Most tumours are vascularized by new-formed vessels, that pierce the tumour from various directions from the surrounding organ tissue. In malignant tumours these vessels are generally low differentiated, of foetal type, their wall lacking elastic lamellae; in benign tumours the vessels may be higher differentiated and more like those of normal tissue.

In low differentiated malignant tumours the capillary angioarchitecture differs greatly from that usually found in the corresponding normal tissue, whereas they are more similar in benign, high differentiated tumours.

When a malignant tumour expands in a tissue, preformed vessels of the latter are destroyed, and eventual vessel remains are found chiefly in the periphery of the tumour, where they are most easily demonstrated in elastin-stained preparations, which can be of diagnostic value.

The amount of capillaries in the tumours is usually greater if the stroma is loose and graceful, than if it is fibrous and poor in cells. There are, however, exceptions to this rule.

On the border between vital and regressively changed tumour tissue, there is almost regularly a zone of dilated vessels, often surrounded by diapedetic hemorrhages, undoubtedly originating in connection with intravital stasis phenomena, caused by blood-vessels compression, local fall of the blood pressure, intravascular tumour proliferation, etc.

The capillary angioarchitecture of the metastases on the whole, generally agrees with that of the primary tumour.

The tumours seem to possess a capillary angioarchitecture, specific to a certain extent, that sometimes allows them to be classified in only blood-corpuscle stained preparations. This is especially true concerning higher differentiated tumours, which is evident from the photographs in this work. Only undifferentiated tumour types often show so uncharacteristic a capillary angioarchitecture, that it is impossible to determine the origin of the tumour with this aid only.

BICHEL, J. (1939.) **On the cultivation of a mouse leukosis in vitro.**—*Inaug. Diss., Aarhus.* pp. 103. [Abst. in *Cancer Res.* **6.** 331, copied *verbatim.*] **2322**

The literature on the behavior of blood elements in tissue culture is reviewed, and a point is made of the fact that all attempts to cultivate lymphocytes unaltered for any considerable length of time have failed. Similarly it has been impossible to find cells in leukemias that would behave as many malignant cells do and grow indefinitely *in vitro.* The author describes his attempts to culture a transmissible mouse leukosis. It was found that the leukosis cells would show continued growth only when provided with the support of other cells, and for this purpose he cultured fibroblasts of chick embryo satisfactorily. The leukosis cells invaded the peripheral portions of the fibroblast colony and there multiplied. By transferring such mixed cultures, the *in vitro* cultivation of the leukosis cells was kept up for 4½ months and probably could have been continued indefinitely. They never transformed to other types, and when inoculated into mice, reproduced the original leukosis. The author feels that these results substantiate the correctness of the concept that mouse leukosis is a neoplastic disease.

DUNNING, W. F., CURTIS, M. R., & MADSEN, M. E. (1947.) **The induction of neoplasms in five strains of rats with acetylaminofluorene.**—*Cancer Res.* **7.** 134–140. [Authors' summary copied *verbatim.*] **2323**

Fifty rats of 5 different inbred lines were fed an average of 3·4 mgm. daily of 2-acetylaminofluorene in Sherman's mash. Forty-one neoplasms were observed, 15 of which were malignant, one not known, and the remainder probably benign.

Rats of the Marshall, August, Fischer, A × C, and Copenhagen strains survived an average of 7·2, 10·1, 10·5, 12·7, and 18·3 months, respectively, after the beginning of acetylaminofluorene feeding. The controls lived an average of 15·8 months after the beginning of the experiment.

Lesions of the liver were most frequent, but not quantitatively associated with the amount of acetylaminofluorene ingested. Cirrhosis was noted in 35 rats including 8 each of 3 strains, all of a fourth and only 1 of the fifth. Twenty-three benign hepatomas and bile duct adenomas were observed, usually associated with cirrhosis. Seven malignant liver neoplasms included 2 sarcoma, 2 carcinoma of bile duct origin and 3 liver cell carcinomas; 2 of the latter showed no cirrhosis in the sections of the liver which were examined.

Six of the 8 liver neoplasms observed in Marshall rats were of bile duct origin, while 7 of 8 liver tumors in Fischer rats arose from the primary liver cells. No bile duct tumors were observed in Copenhagen rats, only one in the A × C rats and both bile duct and liver cell tumors were equally represented in the August rats.

Bladder papilloma and squamous cell cancer were observed in 5 rats including 4 Copenhagens and 1 A × C. Bladder lesions were absent in rats of the 3 other strains.

Malignant mammary tumors were observed in 4 rats including 1 August, 1 A × C and 2 Fischer strain animals.

Only 10 rats of each strain were tested but they suggest real constitutional differences in response to this chemical.

ROUSSY, G., GUÉRIN, M., & GUÉRIN, P. (1943.) Immunisation active contre la leucémie des poules par injection de sang total de virulence atténuée. [**Active immunization against fowl leucosis by inoculation with whole blood of reduced virulence.**]—*C. R. Acad. Sci., Paris.* **216.** 238–241. **2324**

Following the successful immunization of chickens against Rous sarcoma and of rabbits against Shope papilloma, the authors tried to immunize fowls against leucosis.

By successive inoculations with leucaemic blood treated in various ways (glycerinated and frozen for 5–28 weeks, warmed, diluted or formolized), a number of birds were made resistant to intravenous doses of virulent blood. Attenuation by formol according to a modification of the method used by RAMON (1922) was found to be the most successful way of treating the blood. Seven out of ten birds immunized thus resisted infection, as compared with two out of eight controls.—S. M. G.

KISSLING, R. E. (1947.) **Leukoagglutination as a serological diagnosis for avian lymphomatosis.**—*Poult. Sci.* **26.** 74–77. **2325**

An antigen consisting of a suspension of normal lymphocytes from dogs was prepared and used in a rapid plate agglutination test with the sera of 94 fowls.

The lymphocytes were agglutinated by 48 sera, of which 83·3% were obtained from fowls having gross or microscopic lesions of lymphomatosis. The 46 non-reacting sera were from 44 non-lymphomatous fowls and two chickens with microscopic lesions of lymphomatosis only. K. suggests that this test may prove of value in detecting fowls infected with lymphomatosis.

—F. D. ASPLIN.

See also absts. **2368** (eye colour and fowl paralysis); **2433** (avian leucosis, bovine leucaemia, etc., in U.S.A.).

DISEASES [NON-INFECTIVE] OF BREEDING STOCK

HOLT, A. F. (1946.) **Comparison between intracervical and intrauterine methods of artificial insemination.**—*Vet. Rec.* **58.** 309 & 310. **2326**

Semen from two South Devon bulls was diluted according to concentration with egg-yolk phosphate buffer solution and used until it was four days old to inseminate groups of about 375 animals each of normal cows in mid-heat, the experiment extending from October to February. After dilution, each ejaculate was evenly divided between the two insemination methods and the dose was uniformly 0·75 ml.

The conception rates at first insemination by each bull were fairly constant, month by month, over the whole period; there was an average for both bulls of 33·4% by the intra-cervical and 56·1% by the intra-uterine method.—F. L. M. D.

ELLENBERGER, H. B., & LOHMANN, A. H. (1946.) **Artificial insemination of dairy cattle.**—*Bull. Vt. agric. Exp. Sta.* No. 533. pp. 66. **2327**

Research observations made during the routine working of the Experiment Station's artificial insemination centre since its opening in the autumn of 1938 are recorded.

Raw semen uncooled was used up to nine hours old. Dilutions were made up to 1 : 4 with egg-yolk phosphate buffer solution, or with Milovanov's sodium sulphate glucose peptone diluent. The latter appeared to give slightly improved results by the use of dextrin in place of the glucose. Insemination was intracervical or to the anterior vagina.

Only about 60% of the cows had oestrous periods of 17–27 days. Conception rates were

slightly worse for the large minority having very short or very long cycles. The highest conception rates were obtained by inseminating 12–18 hours after heat was first noticed. But under all the very varied conditions of the experiment with regard to age and dilution of semen samples the rates varied remarkably little, about a mean of 50%.

A trial was made of the efficiency of insemination by means of an instrument on the balling-gun principle suitable for use by an unskilled stockman or owner. This discharged a gelatin capsule containing 1·5 ml. raw semen into the anterior vagina. Conception rates of nearly 50% were obtained, but if diluted semen was used the rate declined and the procedure became quite uneconomic. The system was considered useful for herd owners but inoperable where the minimum number of bulls are to be used with the maximum of cows, as in most co-operatives.

945 determinations of vaginal pH *in vivo* were made over complete oestrous cycles; almost invariably the vagina was most acid within one day of the peak of the heat period. In observations made *in vivo* and *in vitro* on vaginal fluid at six-hour intervals following observed heat, the *in vivo* figure was invariably lower, an average of 6·69 as compared with 8·21. Comparison of semen motility change was made between 1 : 1 semen vaginal fluid mixtures *in vitro* and semen placed in the living vagina. Motility was not as well maintained during the first six hours in the vagina as it was *in vitro*, but on the whole more spermatozoa survived for longer periods, up to 36 hours.

—F. L. M. DAWSON.

—. (1946.) **The possibilities and dangers of artificial insemination. Discussion by the Central Veterinary Society.** [Speakers: GOULD, G. N., & EDWARDS, J.]—*Vet. Rec.* **58.** 305–309. **2328**

GOULD considered that livestock improvement, the main possibility of the practice, was capable of far fuller development than attained hitherto. An eventual great increase in the proportion of pedigree to commercial stock should be practicable by this means. He suggested that each centre should have a definite grading-up policy and should select bulls not only for high yielding female ancestry and progeny (proven bulls or sons of proven bulls out of proven dams), but also for their connexion with certain strains which would make organized line-breeding possible on a wide scale within the district.

Farmers should be encouraged to decide on a definite policy for their herds. Other benefits already attained or to be expected included an important decrease in the incidence of infertility, owing to the carefully controlled conditions on the male side, and the reduction in spread of disease, especially venereal. The speaker also stressed the excellent opportunities for research on sterility afforded to veterinary surgeons attached to centres.

All the usually-alleged dangers of artificial insemination were mentioned, and means of overcoming most of them, or minimizing the risk, by good organization were suggested. The most serious hazard was perhaps the possibility of widespread derangement of programmes, through the occurrence of foot and mouth disease among the bulls at a centre. To meet this, centres should evolve plans for co-operative emergency action.

EDWARDS considered that the idea of line-breeding should be approached with more caution and advocated the "hybrid vigour" approach for exploiting artificial insemination in commercial herds. There had been great difficulty in getting adequate performance records for ancestors and progeny of bulls; in this respect the Milk Marketing Board's New Bureau of Records should prove helpful. The records at a centre should be of use to those interested in curing sterility; some American and Danish centres provided a sterility service. More veterinarians specializing in breeding problems should be trained, but early pregnancy diagnosis should be taught to lay inseminators so as to reduce the incidence of traumatic abortions.

Several speakers were interested in the problem of conceptive power in cows affected with "discharge", and suggested that it should be an object of field research.—F. L. M. DAWSON.

KNODT, C. B., & SALISBURY, G. W. (1946.) **The effect of sulfanilamide upon the livability and metabolism of bovine spermatozoa.**—*J. Dairy Sci.* **29.** 285–291. **2329**

Studies were made of the effect of sulphanilamide upon the bacterial count and viability of bull spermatozoa. A level of 300 mg. sulphanilamide per 100 ml. of yolk-citrate dilution fluid gave a significant improvement in the viability of ejaculated bull spermatozoa over a 20-day storage period, bacterial growth also being inhibited. Concentrations of sulphanilamide up to 500 mg. per 100 ml. led to a depressed O_2 and glucose utilization and lactic acid accumulation was increased both absolutely and in relation to the glucose utilized in the presence of sulphanilamide. The effect of the drug upon the use of the semen for artificial insemination was investigated and is to be reported in a further paper. The use of sulphonamides in the manner outlined above may provide the key to the control of bacteria in semen and assist in the control of certain infections spread through artificial insemination.—A. EDEN.

I. GÖTZE, R. (1943.) Zur Frage der natürlichen Paarung und der künstlichen Besamung in der Pferdezucht. **[Natural service and artificial insemination of mares.]**—*Dtsch. tierärztl. Wschr* **51.** 83–87. **2330**

II. GÖTZE, R. (1943.) Künstliche Besamung bei Rindern. **[Artificial insemination of cattle.]** —*Dtsch. tierärztl. Wschr. / Tierärztl. Rdsch.* **51/49.** 142–144. [See also *V. B.* **15.** 370.] **2331**

I. G. discusses the improvement of fertility in mares by carefully managed matings, both natural and artificial, and the use of rectal palpation of the ovaries for ensuring correct mating times. Rectal examination of the ovaries throughout the cycle is described in detail, with a table showing the relation of the findings to breeding practice, and the diagnosis of abnormal oestrous cycles.

G. advocates publicly maintained breeding stations with veterinary personnel, whereby greater use of the best stallions and a higher fertility would be attained.

II. A report is given of the proceedings of the first annual meeting of the Pinneberg (Holstein) cattle breeding society. The results of artificial inseminations are reported. An address by a Danish veterinarian dealing with artificial insemination and control of infertility in Denmark is summarized, and G.'s address on infertility, including practical rules for the instruction of herd-owners, is given at length.—T. H. FRENCH.

VAN DRIMMELEN, G. C. (1946.) **"Spermnests" in the oviduct of the domestic hen.**—*J. S. Afr. vet. med. Ass.* **17.** 42–52. **2332**

Forty-five pullets were used in the experiment: they were mated or artificially inseminated under controlled conditions and subsequently their eggs, timed as to laying by trap-nesting every two hours, were incubated.

Fertile eggs were produced up to six days after insemination or mating. Selected birds were examined under nembutal anaesthesia for spermatozoa in the genital organs [for method employed see *V. B.* **17.** 269].

In four cases, pieces of the cranial end of the oviduct were removed surgically and stained sections made. In material from one such pullet, concentrations of spermatozoa (sperm-nests), were found, by following in serial sections the course of the crypts in the caudal portion of the chalaziferous region. More than 100 such nests were observed, some containing as many as 50–80 sperms.

A second pullet which had been mated naturally yielded sperm-nests in a similar morphological situation, but containing only one or two sperm heads. The author does not consider that the large nests found in the first pullet were necessarily the result of artificial insemination. He suggests that the passage of an ovum down the duct probably liberates spermatozoa from the nests in the crypts, into the lumen. This theory explains the observation that a change of mate takes effect on the type of offspring more rapidly when a hen is in full lay.

The acount of experimental work is preceded by a comprehensive review of the literature on the morphology of the fowl's oviduct.—F. L. M. D.

CROWHURST, R. C., & CASLICK, W. (1946.) **Some observations on equine practice and its relation to the breeding of thoroughbred mares.**—*N. Amer. Vet.* **27.** 761–767. **2333**

The first half of this article comprises a concise summary of the literature concerning breeding physiology and pathology in thoroughbred mares.

It is found in America that most mares tend to have very regular three-weekly cycles and seldom remain in season for more than four days, the period being clearly demarcated. The practice of service on alternate days is condemned as wasteful; there is abundant evidence that a single service on the second or third day of the period is usually sufficient. A second service on the fourth day following the first service is advised, if the mare is still in oestrus.

Early foetal death is listed as a suspected cause of anoestrus and has been associated with an infection of the uterus, but as the records do not classify the various anoestrous cases clinically the figures are of relatively little interest. The authors' original research on this subject comprised the use of stilboestrol intramuscularly on a series of 14 anoestrous mares. Again, the absence of clinical classification makes evaluation difficult, but broadly it appears that in cases showing ovarian quiescence heavy repeated doses produced ovulation with normal heat following a time lag, while in cases of probable suboestrus heat followed injection within 24 hours and was probably symptomatic only.

The condition of vaginal windsucking is stated to be the chief cause of bacterial infections of the tract producing cervicites and endometrites, from which Group C streptococci have been isolated from discharges in a majority of cases. (*Corynebact. equi* and coli-typhoid organisms have also been found.)

Windsucking is, in its turn, the result of a defect in the vulvar structure, fairly readily corrected by the classical operation of the elder Caslick. It is pointed out that the permanently retained suture should be removed for ten days and replaced 6–8 hours after foaling.

There is no suggestion that animals in this category have any endocrine abnormality. No work has been attempted on drug therapy, but it is thought worthy of trial.—F. L. M. DAWSON.

SPRIGGS, D. N. (1946.) **White heifer disease.**—*Vet. Rec.* **58.** 405–409 & 415–418. **2334**

This article begins with a thorough review of the early literature, which defines the condition as persistent imperforate hymen seen in white, or, occasionally, light roan Shorthorn heifers. With recurrence of oestrous cycles, the vagina, and in later or more severe cases the uterus also, becomes distended, with purulent or haemorrhagic fluid; service or a rough journey precipitates intense straining which may be fatal, if not relieved by hymeneal puncture; following this the breeding prognosis is generally hopeless. Arrested Muellerian development in a group of 12 Friesian heifers out of dams served by their own sire has been described, showing striking anatomical parallels to the "white heifer" condition as investigated by S.

The present work is based on a survey of 11 cases, eight of which (two with unknown breeding history) were examined P.M. The heifers were in all cases white pedigree Shorthorns. The gross genital abnormalities varied considerably in extent and arrangement, so that S. is able to recognize three types varying in degree. In the most abnormal (A) group, there was hymeneal constriction, absence of anterior vagina, cervix and uterine body and cystic distension of the cornua; well-marked persistent mesonephric bodies occurred, with sub-mucous vaginal channels in some cases. In the intermediate (B) group, there was a condition of uterus unicornis and possibly a hymeneal constriction; while group C was normal except for such a constriction. The cystic fluid found was always haemorrhagic and mucoid, and bacteriologically sterile, never purulent. Apparently functional endometrial glands were present in the organ walls. Reasons are given for styling certain abnormal cord-like structures as Wolffian remnants (although very similar structures have been described as Muellerian in origin by previous writers), and the root cause of the disease is considered to be an arrested development of the Muellerian ducts, usually asymmetrical, during embryonic development. In all cases the ovaries functioned normally and the appearance of the vulva was also normal. These features are in marked contrast to the findings in a freemartin.

Only in Group C cases was there danger to life, or any need for treatment; a trocar and canula is preferred to a knife, with the free hand controlling it *per rectum*. Both A and C groups are regarded as hopelessly sterile, but individuals in the B class may have a normal breeding life, although many are barren. Close inbreeding is not necessary to produce the condition, although it seems restricted to the pedigree British Shorthorn breed. Selection of matings to minimize incidence appears difficult, but as there is definite colour linkage, a known sire of affected stock should be used, if at all, only on dark-coloured cows. There is, however, little danger of excessive perpetuation under present breeding methods.

—F. L. M. DAWSON.

SJOLLEMA, P. (1941.) Onvruchtbaarheid. Enzootische steriliteit bij het rund. [**Enzootic sterility in cattle.**]—*Tijdschr. Diergeneesk.* **68.** 507–515. **2335**

S. records his observations on a form of enzootic sterility which appears to be common in herds in Friesland. The condition was observed in every animal served by a bull that had been with a cow which had retained a placenta following abortion. The disorder occurred in herds known to be free of contagious abortion or trichomoniasis. The disease, characterized by a catarrhal cervicitis and a slight endometritis, rendered the animal sterile for 2–3 months and was considered identical with a type of sterility described by WILLIAMS (1943) in "*Diseases of the genital organs of domestic animals*", pp. 371–372 by WEBSTER [see *V. B.* **3.** 317] and by LAGERLÖFF [see *V. B.* **10.** 361] from America, Australia and Sweden respectively. A streptococcus was present in the affected animals. It is suspected that this streptococcus, recovered occasionally from healthy cows, may have had its virulence enhanced as the result of abortion. Contagious vaginitis was not considered a cause of sterility.

The semen of affected sires had the following abnormalities:– reduction in quantity and viscosity, the typical *en masse* movement of the sperms absent, many tailless sperms and some with abnormally shaped heads, presence of non-nucleated cells: only 60–65% of the spermatozoa were normal.

Infected bulls were not always completely sterile, but were a source of infection and could not be used. In some cases the testicles and epididymi became infected.

Treatment with antiseptic ointments and solutions had little or no effect on the course of the disease.—P. L. LE ROUX.

HITCHCOCK, M. W. S., & PHILLIPSON, A. T. (1946.) **Hypoglycaemia in a pregnant ewe.**—*Vet. Rec.* **58.** 504. **2336**

Examination of the jugular blood of a Welsh ewe in the last fortnight of pregnancy gave some very low values for glucose which were not always associated with clinical symptoms. On February 18th, the first signs of abnormality appeared, and the next day the ewe had symptoms similar to those described for pregnancy toxaemia. The blood glucose level was 18 mg. %. A few minutes after the subcutaneous injection of 67 gm. of glucose, the blood glucose rose to 163 mg. % and

the sheep was normal in the afternoon, with 75 mg. % blood sugar at 2.30 p.m. and 75 mg. % at 5.30 p.m. On the 20th, the blood sugar was 5 mg. % at 9.30 a.m., and 24 mg. % at 2.30 p.m.: the ewe, however, only appeared a little dull. It appeared to be normal on the 21st, 22nd and 25th, the blood glucose levels being less than 5 mg., 9 mg. and 23 mg. % respectively. Food was now withheld for 48 hours and mild symptoms reappeared when the blood glucose level was 14 mg. %. After moving about the pen, the ewe recovered and food was given. After a temporary rise to 19 mg. %, the blood glucose fell to a level in the region of 14 mg. %. The ewe was found to have lambed overnight on March 4th and on this and the two following days the blood glucose levels were 33 mg., 40 mg. and 43 mg. % respectively. When the ewe was slaughtered about two months later, a heavy infestation of liver fluke was found.—E. COTCHIN.

CLARK, R. (1946.) **Pregnancy disease or domsiekte in ewes.**—*Fmg S. Afr.* **21.** 450–452. **2337**

This is a popular paper which recapitulates the fact that a sudden drop in the diet of heavily pregnant ewes will cause pregnancy toxaemia. Treatment by purgation (with a dose of about 4 oz. of raw linseed oil or 3–4 oz. of Epsom salts) and sugar is recommended.—G. B. S. HEATH.

BRETSCHNEIDER, L. H., DUYVENÉ DE WIT, J. J., & VAN DER KAAY, F. C. (1942.) Die Beziehungen zwischen Gewicht, Grosse der Theka- und Granulosazellen, Progesteron- und Fettgehalt des Corpus luteum graviditatis des Rindes und Schwangerschaftsdauer. **[Relationships between the weight, the size of the theca and granulosa cells, and the progesterone and fat content of the corpus luteum of pregnancy in cattle, and the state of pregnancy.]**—*Klin. Wschr.* 21. 456–459. **2338**

From investigations on 73 corpora lutea obtained from cows at various stages of pregnancy, it was shown that the weight of the corpus luteum, the size of the theca and granulosa cells and the nuclei of the granulosa cells, reached a maximum during the third month of pregnancy and thereafter declined. The weight of the corpus luteum at parturition was less than in the first month of pregnancy. From these observations it was considered probable that the corpus luteum of the cow was most active during the third month of pregnancy. Evidence in support of this view was obtained when 60 of the corpora lutea were assayed for their progesterone content, using the female bitterling as test animal. The progesterone content per gramme and per individual corpus luteum was at a maximum during the third month of pregnancy. The mean progesterone content was 37 μg. per gramme. The fat content of the corpus luteum was unrelated to the progesterone content, it rose gradually until the seventh month of pregnancy and remained high.—A. T. COWIE.

VAN DER NOOT, G. W., REECE, R. P., & SKELLEY, W. C. (1946.) **Induction of mating and lambing in anestrous ewes following pregnant mare serum administration.**—*J. Anim. Sci.* **5.** 313–317. **2339**

An account is given of the attempted induction of oestrus in anestrous ewes by the administration of pregnant mare's serum. Of the 177 ewes treated, 136 came into oestrus and mated and 70 of these ewes lambed. The subsequent breeding record of the ewes which produced lambs as a result of this treatment is also reported.

—MARY C. LOBBAN.

GÖBEL, F. (1943.) Ist die sogenannte Ohrfistel des Pferdes vererbbar? **[Is ear fistula in horses hereditary?.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 269. **2340**

Ear fistula appears to be hereditary in horses. According to SILBERSIEPE & BERGE (1941) it is due to an embryonic malformation of the gill slits. It may take the form of round cyst-like enlargement without a fistular opening, or there may be an opening, with putrid discharge, to indicate the site of the irregularity. When possible, treatment should be surgical, for removal of the fistula.

G. cites a case which he takes to support the theory of heredity. The owner of a three-year-old animal reported that he noticed soon after birth a fistula at the base of the foal's left ear, which failed to respond to daily syringing with creoline solution. The mare (16 years old) had a similar fistula, but in lesser degree, on the right side.—S. M. G.

DE GROOT, T., & NUMANS, S. R. (1946.) Over de erfelijkheid der impotentia coeundi bij stieren. **[Inherited impotence in bulls.]**—*Tijdschr. Diergeneesk.* **71.** 372–379. [English and French summaries: abst. from English summary.] **2341**

The authors studied impotentia coeundi of the bull caused by spasm of the retractor penis muscles. It appears that the defect is almost certainly transmitted recessively. It may also be transmitted *via* the mother to the son. The authors do not advise myectomy of the retractor penis muscles, through which a complete cure may be affected but which results in increasing the incidence of the condition.

HUGHES, H. V. (1946.) **A case of duplicitas in a calf.**—*Vet. J.* **102.** 227–235. **2342**

H. records an abnormality in a calf of embryological significance. External examination suggested that duplication was not complete, in that

only two hind limbs were present and the viscera were enclosed in a single trunk. Detailed dissection, however, revealed that apart from the hind gut which was single all other structures were duplicated, although in some instances, *e.g.*, the liver, there was fusion of two developing organs, and in others, *e.g.*, the urino-genital tracts, one side predominated over that of the other. The two heads, necks and forequarters were completely independent and each was twisted obliquely, one on either side of the composite trunk. The nature of this juxtaposition accounted for variations in segmental growth. An interesting observation was the U-shaped aorta which supplied regular vessels to each "calf" and a normal set of iliac vessels, apart from a double middle sacral artery, arising from the loop in the pelvic region. Dissection of the muscles of the sub-lumbar and pelvic regions showed that of the two normally developed hind limbs one belonged to either calf.—C. W. OTTAWAY.

CONNELL, R. (1945.) **A disease called "bull-nose" occurring in swine in Prairie Provinces.**—*Canad. J. comp. Med.* **9.** 224–228. **2343**

The condition is infectious, but differs from that caused by *A. necrophorus*. Heredity and conformation of the head are discounted as causal factors. The disease should be dealt with by marketing the entire herd and restocking with disease-free pigs after cleaning up and a waiting period of a few months.—R. GWATKIN.

SPUHLER, V. (1944.) Über kongenitale, zerebellare Ataxie mit gleichzeitiger Affektion der Grosshirnrinde bei Felis domestica. [**Congenital cerebellar ataxia with simultaneous affection of the cerebral cortex in** *Felis domestica.*]—*Schweiz. Arch. Tierheilk.* **86.** 359–378, 422–434 & 463–473. **2344**

After an extended summary of the few reports in the literature on congenital cerebellar ataxia in the cat, S. describes two further cases in litter-sisters, associated with cerebellar hypoplasia and cerebral lesions, from the clinical, anatomical and histological aspects. From a detailed analysis of the lesions, he considers a possible cause to have been an intra-uterine leptomeningitis affecting certain parts of the brain at a particular stage of development. The original article will repay study by those interested.—E. COTCHIN.

ANON. (1947.) **Infections and the developing embryo.**—*Lancet.* **252.** 639–640. **2345**

Since GREGG drew attention in 1941 to the connexion between rubella during pregnancy and congenital cataract, further papers confirming his findings have appeared. There is some evidence that other virus infections occurring during pregnancy besides rubella may cause foetal anomalies. The opportunity for further research both clinical and experimental is pointed out. On the experimental side it is suggested that use be made of such diseases as canine distemper.—M. C.

See also absts. **2365** (nutrition and fertility in sheep); **2410** (sterility in horses).

DISEASES, GENERAL

DALLING, T. (1945.) **Diseases of animals: Prevention and treatment.**—*J. R. agric. Soc.* **106.** 13–29. **2346**

D. deals with the following conditions: bovine mastitis, with special reference to *Str. agalactiae* infection; brucellosis, with special reference to vaccination with strain 19; poultry diseases (coccidiosis, with special reference to treatment and control with sulphamezathine, six-day chick disease, salmonella infections, pullet disease, and fowl paralysis); the control of internal parasites by phenothiazine; bovine TB., dealing chiefly with transmission from man to animals and animals to man; poisoning of livestock (nicotine poisoning in lambs, poisoning of cattle by dog's mercury, zinc phosphide poisoning, charlock poisoning in lambs, mushroom poisoning in cattle, lead poisoning in bovines); and Johne's disease, especially the time of survival of the causal organism.—E. COTCHIN.

ANON. (1946.) **The investigation of stock diseases in South Africa.**—*Fmg S. Afr.* **21.** 431–432. **2347**

The farming community has been criticizing the delay in tackling disease problems in South Africa. These charges are answered, and it is pointed out that, concurrently with a great increase in demand for biological products, about 25% of professional and technical staff have left Onderstepoort.—G. B. S. HEATH.

STEELE-BODGER, H. W. (1946.) **The need for a national policy for the control of diseases of animals.**—*J. Fmrs' Cl., Lond.* Part 6. pp. 78–85. Discussion pp. 85–97. **2348**

STEELE-BODGER commenced by giving a brief history of the Animal Health Division of the British Ministry of Agriculture and Fisheries, from its commencement as a "Cattle Plague Department" in the 1860's, until its present-day position.

He lays down certain principles which should be the basis of a policy, but makes no definite suggestions.

SALTER CHALKER said that his experiences with the Ministry had not been so unfruitful as those of the speaker. MONTGOMERY, while

criticizing the Ministry for being too slow, gave great credit to it and pointed out how its programme had been greatly handicapped by the war.

—D. S. RABAGLIATI.

BOUVIER, G. (1946.) Observations sur les maladies du gibier, de quelques animaux sauvages et des poissons (1942–1945). **[Observations on diseases of wild animals and fish, 1942-45.]**—*Schweiz. Arch. Tierheilk.* **88.** 268–274 [In French.] **2349**

Findings P.M. in the bodies of game and wild animals are given. Two chamois had signs of contagious agalactia of goats. A hare had haemorrhagic septicaemia, another, pseudo-tuberculosis and a third, *Br. abortus* infection. A swan had haemorrhagic septicaemia and a grebe contagious epithelioma. A number of foxes were killed by eating rats poisoned with thallium.

—R. MACGREGOR.

SUNDERMAN, F. W. (1946.) **Approaches to the study of edema and dehydration.**—*Amer. J. clin. Path.* **16.** 353–364. **2350**

The terms "oedema" and "dehydration" are defined and the significance of the water balance of the body and variations in distribution of intra- and extra-cellular fluids are discussed. Several laboratory measurements useful in the study of these conditions are described, including the electrophoretic method of detecting changes in the serum protein fractions. The various types of oedema and dehydration are fully classified. It is emphasized that in clinical manifestations of oedema and dehydration there is usually more than one cause or mechanism involved and that treatment resolves itself essentially into an attempt to attack the underlying disturbance.—M. C. L.

NOODER, H. J. (1943.) Mededeelingen uit de practijk. **[Clinical notes. Milk fever in rabbits, osteomalacia in goats and poisoning of cattle with calcium arsenate.]**—*Tijdschr. Diergeneesk.* **70.** 19–21. **2351**

N. records the symptoms (refusal of food, rather soft faeces, complete cessation of milk secretion and symptoms of paresis especially in the hind legs) of a condition in rabbits diagnosed as milk fever. The disease occurred 6–8 days after parturition and approximately 90% of the cases recovered within 4–24 hours after the administration of 10 ml. borogluconate. Some of the cases had distention of the abdomen, undoubtedly due to excessive feeding of young grass, and were drenched with a 1% solution of creoline solution in milk.

During March, April and May N. attended goats that were losing condition rapidly and ate badly. Their teeth were very loose and the onset of osteomalacia was suspected. All the animals recovered within three weeks after exposure to sunlight in the pasture and dosing twice a day with cod liver oil. "Vigantol" was administered subcutaneously in doses of 3–5 ml.

Fourteen head of cattle, in good condition, became ill suddenly. The milk yield of eleven milch cows dropped considerably. All the animals were affected with a profuse diarrhoea characteristic of Johne's disease; temperatures were normal or slightly subnormal and the pulse 70–80, bounding and unrelated to the temperatures; there was slight ataxia; respiration was normal and the visible mucosa red. The symptoms suggested an infectious disease or an intoxication. Although there was a history of the herd grazing in an orchard which had been sprayed with Bordeaux mixture, the symptoms suggested grass tetany, and all animals were injected immediately with borogluconate. Blood and urine were collected from the two worst cases for chemical analysis. Several of the cows had relapses, with severe symptoms of grass tetany, and Ca-Mg. solution was administered intravenously. There was a typical response in 10 min. and the animals recovered. Further relapses occurred and again there was an immediate response to treatment. A few cows relapsed again and this time air inflation of the udder was carried out and two days later all animals appeared normal. It was later discovered that the trees had been sprayed with calcium arsenate. The blood analysis revealed nothing abnormal except an anhydraemia which would have been revealed had a blood count been made. He concludes by pointing out that the symptoms manifested in this serious outbreak of arsenical poisoning were those of grass tetany and that the recognized treatment for grass tetany had a beneficial effect.—P. L. LE R.

VISWANATHAN, G. R. (1946.) **An undiagnosed disease among ponies in the Nilgiris district.**—*Indian vet. J.* **23.** 131–132. **2352**

A highly fatal disease, of unknown aetiology, occurred among local ponies. Dyspnoea was the prominent symptom. The disease was not glanders.—S. P. BERI.

LEMÉTAYER, E., NICOL, L., GIRARD, O., & VIRAT, B. (1944.) Hémorragie hépatique sous-capsulaire chez les Chevaux producteurs de sérum thérapeutique. **[Subcapsular haemorrhage of the liver in serum-producing horses.]**—*Bull. Acad. vét. Fr.* **17.** 53–59. **2353**

Two hundred and seventy cases occurring during 1930–43 are discussed. Horses of all ages were affected, but the incidence was greatest in animals which had been used for long periods in the production of serum. Animals in prime condition were the most frequent victims. After

excluding other possible causes, the authors conclude that in their cases the haemorrhages were spontaneous. The premonitary symptoms and syndrome are described, the latter being typical of internal haemorrhages in general.—L. M. M.

I. BANKIER, J. C. (1943.) **Enzootic bovine haematuria in British Columbia.**—*Canad. J. comp. Med.* **7.** 101–107, 146–151 & 178–181. **2354**

II. BANKIER, J. C. (1946.) **Enzootic bovine haematuria (Haematuria Vesicalis). Experiments with the feeding of soil and the intravenous administration of soil extracts.**—*Ibid.* **10.** 155–158. [French summary.] **2355**

The disease has been known in parts of British Columbia for at least 60 years; it is particularly prevalent in an area which stretches for 100 miles along the Fraser River. This area in the past supported a heavy growth of timber and is now being cleared and opened up for agriculture. The disease appears to be associated with certain farms rather than with any particular soil type, but occurs chiefly on the lighter soils and is not found on peat land or heavy clay loams. The distribution suggests a relationship to the chemical composition of the soil, no correlation could be traced between the flora and the incidence.

Experiments were made on a farm where the incidence of the disease had been high. Healthy cattle from outside areas were brought to the farm for these experiments.

Data obtained suggest that the disease may be associated with the ingestion of soil. When cattle on the "haematuria" farm were fed on fodder from healthy farms and not allowed to graze, the onset of the disease was considerably delayed but not entirely prevented.

The results of chemical analysis of the soil for manganese, sodium, potassium, calcium, magnesium, aluminium, iron, cobalt and selenium are given. They did not reveal any significant differences as compared with samples from healthy farms.

Analyses of blood serum of cattle from affected and non-affected farms are given.

Attempts were made to infect healthy cattle and guinea pigs by oral administration of urine and of bladder tissue from affected animals. None of the experimental animals developed the disease.

Top dressing the land with gypsum appears to have some value as a control measure.

II. In an attempt to produce bovine haematuria artificially, 35,580 g. of soil from a known "haematuria farm" were fed over a period of 11 months to each of two cattle. In a second experiment, distilled water, containing 0·2% HCl and distilled water containing 0·4% HCl were used to prepare extracts from 17,340, 12,960 and 12,340 g. of the soil, which were given intravenously to three cattle over a period of 19 months. Clinical evidence of the disease was not produced, but in the urine of one animal fed soil and two given intravenous injections erythrocytes could be detected microscopically.—P. J. G. PLUMMER.

PRIOUZEAU, M. (1944.) Du mal vertébral chez les bovidés: étude clinique. [**Osteomyelitis of the vertebrae in cattle of the Parthenay breed.**] —*Bull. Acad. vét. Fr.* **17.** 280–282. **2356**

Under the name *mal vertébral*, P. describes a condition, occurring in cattle of the Parthenay breed, of which he has seen 49 cases in 25 years. The lesions are those of osteitis, osteoperiostitis, osteo-arthritis, suppurative osteomyelitis, or discharging bone abscesses, involving chiefly the posterior cervical and anterior thoracic vertebrae and sometimes the lumbar region, but more rarely the middle cervical vertebrae: in some cases, the lesions involve only the intervertebral discs. Calves and adults were affected. Bacterial infection appeared to follow trauma, broncho-pneumonia, or joint ill. Prognosis was poor, death usually occurring in six months to two years. The symptoms in the various types of case are described. The incidence of TB. was very low in these cattle.—E. COTCHIN.

KAHNERT. (1942.) Ursachen von Verlusten in der Bullenhaltung. [**Causes of loss of bulls.**] —*Dtsch. tierärztl. Wschr.* **50.** 470–471. **2357**

Insurance figures quoted show that the causes of loss of a series of 1,000 breeding bulls were as follows:– 165 from infectious disease (129 with TB., 24 with foot and mouth disease); 24 from leucosis; five from osteomalacia; 46 from nervous diseases (in 32 cases leading to impotence), 36 from respiratory diseases; 194 from digestive diseases, including 101 foreign body cases and 20 of tympany; 16 from circulatory diseases; 203 from impotence (57 with diseases of the penis and prepuce, 24 with diseases of the testis, 22 with infectious diseases of the genitalia, 32 incapable of service, 26 with loss of libido and 42 with sterility); 209 from diseases of bones, joints or ligaments, including 34 cases of fracture and 43 of actinomycosis; 102 from unclassified diseases. The most serious causes were thus tuberculosis, foreign bodies, and impotence.—E. COTCHIN.

WYSSMANN, E. (1946.) Über Lungenemphysem und ähnliche Atembeschwerden beim Rind. [**Lung emphysema and related respiratory disorders in cattle.**]—*Schweiz. Arch. Tierheilk.* **88.** 607–620. **2358**

Lung emphysema occurs relatively rarely in bovines except after foot and mouth disease. There can be many causes such as excitement and

special exertion during dystocia or transport, dyspnoea, broncho-pneumonia, pneumonia due to foreign bodies, etc., but TB. and valvular disease seem to be only rarely connected with it. Usually the emphysema is acute after dystocia or uterine prolapse; accelerated respiration, loud percussion sounds and increased vesicular sounds are diagnostic. Improvement usually follows in a few days after complete rest in a well ventilated, cool byre. Chronic emphysema is accompanied by wheezing, dry cough, pain on percussion and diminished respiratory sounds. On section, the lung is up to three times its normal size and light grey to white in colour; the lobes are widely separated. About 6–12 months after violent outbreaks of foot and mouth disease, 10–20% of affected animals have emaciation and a condition similar to broken wind (asthma postaphtosa); The occurrence of bronchial asthma in cows is considered possible and has been treated by potassium iodide and tincture of valerian.—C. A.

ANON. (1946.) **Lumpy skin disease in game.**—*Fmg S. Afr.* **21.** 502. **2359**

The attention of stock owners is drawn to the fact that skin lesions found in a duiker and forwarded by a farmer resembled closely those seen on the skins of cattle suffering from lumpy skin disease. The lesions were unfortunately too old for a definite diagnosis. It is feared that if the disease affects antelopes the difficult problem may become worse and the skins of all shot game should therefore be examined for lesions: if anything suspicious is found, bits of the affected skin, preserved in formalin or packed in dry salt, should be forwarded immediately to the research institute at Onderstepoort.—P. L. LE ROUX.

EDMUNDS, E. V. (1946.) **Further observations on use of "Sulphahalidine" (Phthalylsulphathiazole) in the treatment of enteritis in sucking pigs.**—*N. Amer. Vet.* **27.** 564–566. **2360**

Enteritis among sucking pigs on swill-feeding ranches in California has increased in recent years and losses may be up to 85% of all litters farrowed. In the present study there were 465 pigs between the ages of three days and eight weeks. Sulphathalidine was used in treatment, being given orally in tablet form, 0·25 g. daily to piglets up to ten days old and 0·5 g. every second day for pigs ten days to eight weeks. In the early stages one dose was usually sufficient to check the symptoms. If the disease was well established, several days' treatment was necessary. On the average, 2–3 treatments proved sufficient. Maintenance of the milk flow by adequate feeding of the sow is a useful adjunct to treatment. Treatment with sulphathalidine gave a 95% recovery rate, compared with a mortality of 80–85% in untreated controls.—D. L. LUKE.

COVAULT, C. H. (1946.) **Common dermatoses of the dog.**—*Vet. Student, Iowa.* **8.** 201–206. [Reprinted from *Ledeile Vet. Bull.* **10.** No. 3.] **2361**

C. discusses demodectic and sarcoptic mange, ringworm, and non-parasitic dermatitis.

—E. COTCHIN.

RIGDON, R. H., & FLETCHER, D. E. (1947.) **Blindness in ducks accompanying hypoglycemia. A clinical and pathological study.**—*Amer. J. Path.* **23.** 227–235. **2362**

Ducks were blind on the second day following the injection of large amounts of insulin, when the blood glucose levels were markedly decreased. Sight gradually returned as the blood glucose levels became normal. Histologically, the brain, optic nerve and retina had interstitial oedema and focal necrosis, but these changes appeared to show marked regression later. The lesions were similar to those observed in the brains of ducks with a severe malarial infection and apparently resulted from a disturbance in cerebral glycolysis. It has been suggested that the lesions in the ducks with malaria resulted from anoxia and from the present studies it appears that a similar lesion may develop in the brains of ducks if either anoxia or hypoglycaemia is present. The optic nerve appears to be particularly susceptible to hypoglycaemia.

—E. COTCHIN.

WATSON, C. J., & RAPPAPORT, E. M. (1945.) **A comparison of the results obtained with the Hanger cephalin-cholesterol flocculation test and the Maclagan thymol turbidity test in patients with liver disease.**—*J. Lab. clin. Med.* **30.** 983–991. **2363**

Two hundred and fifty-two blood sera from 31 normal human subjects, 60 cases of infectious hepatitis and 54 cases of miscellaneous disease were subjected to the cephalin-cholesterol flocculation test described by HANGER (1939) and to the thymol turbidity test described by MACLAGAN (1944). The results of the two tests agreed in 89·3% of the sera tested. In the hepatitis group discrepancies were border-line but in cases of cirrhosis, subacute atrophy and cancer more serious discrepancies were encountered. It is suggested that the Maclagan test may be used to advantage in the differential diagnosis of jaundice or liver disease and for serial observation in cases of infectious hepatitis.—J. LOCHIEL MCGIRR.

SVIRBELY, J. L., MONACO, A. R., & ALFORD, W. C. (1946.) **The comparative efficiency of various liver function tests in detecting hepatic damage produced in dogs by xylidine.**—*J. Lab. clin. Med.*

31. 1133–1143. [Authors' summary and conclusions copied *verbatim.*] **2364**

Xylidine at a moderately low concentration is an effective agent in producing jaundice and fatty livers in dogs. With prolonged exposure, the livers pass through a precirrhotic to a cirrhotic stage. Microscopic examination of the liver showed evidence of parenchymal damage with no evident impairment in the cells of the reticuloendothelial system, since these retain their function of phagocytosis of iron-positive pigment.

The bromsulfalein retention test was found to be the most reliable one in detecting liver damage. The rose bengal retention test was almost as sensitive but had certain disadvantages which made it less desirable.

The serum phosphatase activity and prothrombin time ratio were of equal value but less conclusive than the dye retention tests.

The bilirubin retention and urinary urobilinogen excretion tests gave indications of liver injury but were less consistent than the dye retention, serum phosphatase, or prothrombin time ratio tests.

Icterus index determinations may be of some value whereas the van den Bergh, fibrinogen, and albumin : globulin ratio estimations do not appear to yield information early enough to aid in the diagnosis of liver injury.

This order of efficiency agrees very well with the results obtained by Neefe and associates [1944] in their work on liver damage produced in human subjects by administration of yellow fever vaccine and with the findings of Drill and Ivy [1944] in carbon tetrachloride poisoned dogs.

See also absts. **2366** (atherosclerosis); **2442** (modern diagnosis).

NUTRITIONAL AND METABOLIC DISORDERS

Miller, R. F., Hart, G. H., & Cole, H. H. (1942.) **Fertility in sheep as affected by nutrition during the breeding season and pregnancy.** —*Bull. Calif. agric. Exp. Sta.* No. 672. pp. 31. **2365**

Since a high percentage lamb crop is essential to the financial success of the sheep farmer, long term studies of nutritional effects during breeding season and pregnancy were instituted in 1932. During the seven years covered by the experiment, the main factors studied, on yearling and adult ewes, were (1) low vitamin A, with and without low protein intake, (2) low protein intake, with and without low phosphorus and (3) low vitamin B complex. Results were slightly conflicting and difficult to interpret, but the authors conclude that high protein diets containing adequate amounts of vitamin A and phosphorus are essential to the production of good lamb crops. The vitamin B complex is synthesized in the rumen and is presumably not important as an ingredient of the diet. When ewes are in good condition, gain in weight during the breeding season is not essential for high fecundity, but "flushing" is desirable when ewes are thin. [The original will repay study by those interested. It contains a section on reproductive processes in sheep and an extensive bibliography].—G. B. S. Heath.

Rosenkrantz, J. A., & Bruger, M. (1946.) **Experimental atherosclerosis. IX. The effect of prolonged feeding of egg yolk powder in rats.** —*Arch. Path.* **42.** 81–87. [Authors' summary copied *verbatim.*] [For part VI, see *V. B.* **17.** 87.] **2366**

The prolonged feeding of egg yolk powder to rats augmented the cholesterol content of the blood and the liver but failed to produce atherosclerosis of the aorta. The lecithin content of the liver was not increased by feeding of egg yolk.

Deposits of fat appeared in the liver six to nine months after the feeding of egg yolk was begun. It follows that under the conditions of this experiment the lecithin present in egg yolk failed to inhibit lipoid infiltration of the liver.

During the latter months of the experiment the rats fed egg yolk powder gained weight more rapidly than did the control rats.

The systolic blood pressure was not elevated in rats fed egg yolk powder.

See also absts. **2337** (pregnancy disease in ewes); **2351** (milk fever in rabbits and osteomalacia in goats); **2362** (hypoglycaemia in ducks); **2433** (vitamin deficiencies in U.S.A.); **2438** (porphyrins in veterinary medicine); **2444** (carbohydrate metabolism).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Beckwith, T. D., Fleming, W. C., & Williams, A. (1943.) **Repair of the tooth and paradentium in the guinea pig, rabbit and cat.**—*Univ. Calif. publ. Microbiol.* **1.** 1–64. [Abst. from abst. in *Biol. Abstr.* Sect. F. **19.** No. 1. 12. Signed: T. D. Beckwith.] **2367**

Three or four days after artificial destruction of tissue, peridental fibres are affected and many osteoclastic syncytia gather upon the inner surface of aveolar bone: the fibres are severed and many Howship lacunae are formed. After the surface of alveolar bone, the tooth surface is affected.

Bone cementum, dentine, and enamel may be attacked. Drainage may develop directly to the exterior by way of soft tissue or by way of the lymphatic channels into the bone. Injury to the pulp tissue is followed, in some instances, by the production of amyloid in the pulp canal. Repair and replacement of soft tissues such as peridental membrane commence before all destruction has abated. Replacement of cementum and alveolar bone begin promptly, but the authors observed only once that dentine replaced itself. At an early stage of repair, granulation tissue appears. Fibroblasts colonize upon the surface of cementum or dentine where Sharpey fibres previously connected tooth and bone of socket. These fibroblasts become sessile upon this dental surface, and their fibrils stream outward from the tooth and towards the bone. Repair of paradental fibres thus takes place and is initiated upon the tooth. Fundamentally, fibroblasts which later are to form new peridental fibres are tropic to dentine as a base from which to elongate. About these fibroblasts upon the dentine, cementum is laid down. Histologic evidence from these experiments demonstrates, in g. pigs and rabbits, not only that a separated portion of a tooth may remain living for at least 30 days, but also that the peridental fibres upon the coronal fragment may be replaced. The growth habit of epithelium frequently causes obstruction to the repair of peridental fibres. When epithelium proliferates over the surface of bone, peridental fibres can no longer become attached. Frequently there is microscopical evidence of competition between epithelium and peridental fibres at the surface of the bone. Finally there is partial reformation and attachment of renewed Sharpey fibres to bone, with ingrowth of epithelium interspersed between these areas.

NELSON, N. M. (1947.) **Normal eye color in the chicken.**—*Poult. Sci.* **26.** 61–66. **2368**

This article is a review of the literature concerning the pigments producing eye colour and the factors known to influence its variation. N. concludes that the practice of culling fowls with poor eye colour is unwarranted, in as much as a fading of the yellow factor occurs with continued egg production. He is also of the opinion that it is wrong to diagnose ocular lymphomatosis in fowls simply on depigmentation of one iris.

—J. D. BLAXLAND.

BARRON, D. H. (1946.) **The oxygen pressure gradient between the maternal and fetal blood in pregnant sheep.**—*Yale J. Biol. Med.* **19.** 23–27. [Author's summary copied *verbatim.*] **2369**

The oxygen pressures in the fetal umbilical artery, umbilical vein, the uterine artery and uterine vein have been estimated in pregnant sheep in the latter half of the gestation period. These estimations indicate (1) that during the period under consideration the pressure gradient favors the movement of oxygen from the maternal to the fetal blood ; (2) that the average pressure difference increases from 11 mm Hg at 80 days to 57 mm at 147 days.

KUDRYAVTSEV, P. N., & GLEBINA, E. I. (1941.) Massazh vymeni remontnykh svinei do perovogo pokrytiya i ikh produktivnost'. [**Massage of the mammary glands of brood sows prior to their first service, and their productivity. Preliminary communication.**]—*Vestn.sel'skokhoz. Nauki Zhivotn.* No. 2. pp. 136–150. **2370**

The authors report the results of preliminary tests on increasing the milk yield of sows.

Study of 320 sows of the Large White breed showed a definite relation between the build of the animal and the milk yield, those with the girth of the breast greater than the length of the trunk giving the best average milk yields.

Tests were then carried out to determine the effect of massage of the mammary glands prior to service on the subsequent milk yield from a given type. Nine-month-old pigs of the Large White breed were divided into three groups of six. They were selected from litters in groups of three, pigs from the same litter being present in each of the three groups. One group served as controls, the second group was subjected to massage of the nipples and the third group was subjected to massage of the mammary glands. All three groups were kept under identical living and feeding conditions.

Procedure with the third group consisted of vigorous rubbing from front to back and *vice versa* with the palm of the hand alternatively of the left and right sides of the mammary glands, followed by massage with the fingers round each nipple. Venous blood from the front four pairs of milk glands flows forward and from the sixth and seventh pair backward toward the groin ; blood from the fifth pair goes partly by the backward and partly the forward flowing vein. The lymphatic channels are for the most part parallel to the blood vessels. The flow of lymph being slow, movement of the hand must not be rapid. To stimulate flow of venous blood, uneven pressure was employed. Proceeding towards the groin pressure was weak until the fifth pair of glands was reached, then somewhat stronger for the last pairs. Going forwards, pressure was reversed, being weak for the first three pairs and stronger for the last four pairs. Massage was carried out once a day for 7–12 min. per pig over a period of two months. After initial dislike the pigs very willingly submitted to massage.

On massage the skin first blanches, then becomes pink around the nipples, pinkness gradually spreading over the massaged area. The pinkness lasts some 15 minutes. The nipples become taut and erect.

A few days after the beginning of the test, a small quantity of sticky, yellowish fluid was exuded, ceasing several days later. This flow had apparently no connexion with the oestrous cycle.

At the end of treatment the nipples and udders of the pigs with massage of the mammary glands were better developed than those of the controls. With the pigs massaged on the nipples alone, the nipples were better developed, but the udders were little better than those of the controls. The control pigs increased in weight more than the massaged animals.

With massage of the mammary glands there was also increased development of the uterus, the ovaries were bigger and there was a larger number of follicles. With massage of the nipples alone, the ovaries were smaller than normal and there was complete absence of corpora lutea.

Casts were prepared for all three groups from the mammary glands of the left side. Glands of the right side were fixed for histological examination.

Comparison of the preparations showed that the casts from pigs with massage of the whole mammary glands were more solid, the ducts more developed with more branching, and covered fairly thickly with minute alveoli as compared with the controls. Comparison of micro-sections showed that the lobules of the controls were formed of unevenly developed alveoli, large on the outside and very small in the centre, whereas the lobules of pigs with mammary gland massage were of more even size. Casts from pigs with massage of the nipples were difficult to obtain as the ducts were very small. They were thin and both main passages and branches were less developed than those of the other groups. Alveoli were completely absent in the casts and almost absent on histological sections.

Pigs with massage of the mammary glands prior to service gave average first litters of 10·3 young as compared with 8·4 for similar pigs without massage. The average weight of each suckling at birth was also greater, 1·54 Kg. as compared with 1·46 Kg. At ten days old the weights of piglets sucking massaged sows were still greater than those from unmassaged sows, averaging 3·32 kg. as compared with 2·89 kg.

The authors regard these results of massage of the mammary glands as very promising and further tests on a larger scale are to be undertaken. A number of tables and photographs of casts and histological sections are given in the article.

—G. Salter.

Stoll, R. (1944.) Pseudo-intersexualité et pseudohyperféminisation de l'embryon de poulet obtenues par de hautes températures d'incubation. [**Pseudo-hermaphroditism in chicks as a result of high incubation temperatures.**]—*C. R. Soc. Biol. Paris.* **138.** 324–325. **2371**

S. previously (1944) reported that the Müllerian ducts of male chick embryos have normally disappeared by the 12th day of incubation. Injections of oestradiol benzoate into genetic male embryos resulted in the persistence of the Müllerian ducts and the production of intersexes. A similar effect was produced when eggs were incubated at 40·5°C. Persistent Müllerian ducts were present in 37 of 60 male embryos examined at 13–17 days of age and were comparable in size to the ducts of a normal female of the same age. In 17 out of 50 female embryos the right oviduct was longer than normal and contained a shell gland; in two the right oviduct was as well developed as the left. Although treated embryos were slightly smaller than embryos incubated at 37·5°C., the gonads were normal in all cases.—F. D. Asplin.

Wang, E. (1946.) **Creatine metabolism and endocrine regulation.**—*Acta med. scand.* Suppl. No. 169. pp. 81. [In English. Author's summary slightly amended.] **2372**

The aim of the investigation was to examine the significance of endocrine regulation for the creatine metabolism. The examination comprised the thyroid, the adrenals and the pituitary and also the possible co-operation of these glands.

In rabbits muscle creatine and phosphocreatine were determined. As a measure of the moisture content the total nitrogen was determined also. In one section of the investigation creatine and creatinine elimination in urine was examined.

Results :–

1. Thyroxine treatment reduces muscle creatine content. There are signs indicating that the action upon the phosphocreatine is the primary occurrence. At the same time the moisture content, as judged by total nitrogen, is reduced.

2. In thyroprive animals the opposite effect is observed. The moisture content is increased. The absolute average value of phosphocreatine is unchanged, but when the alteration of moisture content is taken into consideration the value is definitely increased. For creatine an increase is not definitely demonstrated.

3. Thyrotoxicosis induces an excess creatine elimination, but this creatinuria is only a transitory one and soon decreases, approaching the normal level. At the same time the creatine elimination is very much reduced. The decrease of creatine and

creatinine elimination is regarded as an indication of a creatine-sparing process.

4. Extirpation of adrenals does not definitely influence the average level of creatine and phosphocreatine in normals. Adrenalectomy in thyroprive animals and thyroxine treatment of adrenalectomized animals reveal no effect of the adrenals, the result being identical with those of normal animals. But rapid death of adrenalectomized animals treated with thyroxine demonstrates that an interaction of these endocrine glands is present, evidently acting upon other metabolic processes.

5. Hypophysectomy in normal animals has no definite effect upon the average creatine and phosphocreatine content of the muscles. In thyroprive animals also no effect can be traced.

In hypophysectomized animals thyroxine administration does not reduce creatine and phosphocreatine. The missing effect is explained by the absence of the thyrotropic action of the pituitary, which will reduce thyroid activity, thereby increasing the want of thyroxine in the organism. Possibly the absence of other pituitary functions is also compensated by utilization of thyroxine.

Conclusions :–

Of the endocrine glands examined the thyroid alone seems to exert a direct influence upon the creatine metabolism. To judge from the urine examinations this effect is only a limited one. But on the other hand the level of phosphocreatine in the muscles seems to be submitted to a continuous influence from the thyroid, being in normal condition in an equilibrium. It is suggested that any influence increasing directly or indirectly the thyroid activity will disturb this equilibrium and induce a creatinuria, thereby explaining the frequent and apparently not specific occurrence of this phenomenon.

It is pointed out that the relations of creatine and creatinine found in the urine are practically important, explaining the incongruency between basal metabolic rate and creatinuria frequently found in Grave's disease and obviously eliminating the possibility of utilizing creatinuria as a measure of the basal metabolic rate in this condition. The reduction of creatinine is an experimental counterpart to the reduced creatinine coefficient found in human thyrotoxicosis, but it is improbable that this phenomenon may be utilized for judging the basal metabolic rate.

As the endocrine regulation of the creatine metabolism seems to be limited to the thyroid and as the effect of this gland also seems to be restricted, endocrine regulation of the creatine metabolism does not seem to be of dominating significance.

See also absts. **2254** (blood picture in cattle) **2444** (carbohydrate metabolism).

POISONS AND POISONING

See absts. **2346** (various poisons); **2351** (calcium arsenate); **2421-2423** (plant poisons in Queensland).

PHARMACOLOGY AND THERAPEUTICS

FREI, W. (1944.) Oxydationsvorgänge bei Bakterien und ihre Bedeutung für Pathogenese und Chemotherapie. **[Oxidation in bacteria and its significance in pathogenesis and chemotherapy.]**—*Schweiz. med. Wschr.* **74.** 69–74. **2373**

F. discusses briefly the bacterial enzymic processes of oxidation and reduction, mentions how they may be demonstrated and shows how bacteria fall into broad groups according to their oxidation enzyme pattern. He discusses some of the possible relationships between the enzyme pattern of the organism on the one hand and the tissue milieu (presence of specific substrates, presence of oxygen or other H_2-acceptors, Eh, pH, etc.) on the other, that might be concerned in determining the pathogenesis and localization of disease.

F. describes experiments carried out in collaboration with Jezierski on the influence of sulphanilamide on bacterial oxidation processes. A concentration of cibazol which inhibited dehydrogenase activity (Thunberg technique) of washed suspensions of *Past. aviseptica* was found to enhance that of *E. rhusiopathiae.* A much lower concentration of cibazol, however, enhanced dehydrogenase activity of the former organism and a much higher concentration inhibited that of the latter. In this connexion, F. mentions his previous observations on the effect of cibazol on infection with these organisms in mice: the drug was active against *Past. aviseptica* but not against *E. rhusiopathiae.* *p*-Aminobenzoic acid appeared to be capable of antagonizing the *in vitro* effects of cibazol on dehydrogenase activity. By itself, *p*-aminobenzoic acid in low concentrations favoured and in higher concentrations inhibited dehydrogenase activity of *E. rhusiopathiae.*

Observations on these lines should be extended to other organisms, as they may provide further insight into the method of action of sulphanilamide.—E. COTCHIN.

JEIZERSKI, A. (1946.) Die Wirkung von Sulfanilamiden auf Mikro-organismen im Reagensglas und im Tierkörper. **[The action of sulphonamides on micro-organisms *in vitro* and *in vivo*.]**—*Schweiz. Arch. Tierheilk.* **88.** 94–102. **2374**

Sulphathiazole and sulphadimethylpyrimidine were much more effective *in vitro* against *Cl. chauvoei* than against *Cl. oedematiens*. 0·002–0·0002% of the drugs inhibited the growth of the first organism but 0·02–2% was necessary to produce a similar effect on the second. When g. pigs were infected with these two organisms, similar doses of the drugs were necessary to produce a curative effect, *i.e.*, the difference observed *in vitro* was no longer seen. The natural defences of the body (phagocytes, antibodies) play an important part in dealing with the infection in the living organism.—J. M. ROBSON.

DE BUENO, M. R. (1944.) Estudio comparativo experimental de algunos sulfamidados y del acido para-aminobenzoico. **[Comparative study of certain sulphonamides and *p*-aminobenzoic acid.]**—*Agric. téc., Chile.* **4.** 125–144. [English summary.] **2375**

Experiments in white mice were undertaken to find out the mode of action of promine (p-p′-diaminodiphenylsulphone N-N′ glucose sulphonate), which is known to inhibit the human type tubercle bacillus and some pyogenic organisms. For this purpose, the actions of promine, and of promine with *p*-aminobenzoic acid were compared with the actions of sulphanilamide, sulphapyridine and sulphadiazine, both alone and in combination with *p*-aminobenzoic acid. The test organism was *Str. equi*.

From the results the author concludes that promine is less influenced by *p*-aminobenzoic acid than are the other three drugs, and therefore that its mode of action may be different. Further experiments will be necessary to determine the degree and type of difference.—I. W. JENNINGS.

BAMBAS, L. L. (1945.) **Some chemotherapeutically active sulfones. I., II. 4-Aminophenyl-2′-aminothiazolyl-5′ sulfone and analogs.**—*J. Amer. chem. Soc.* **67.** 668–670 & 671–673. [Absts. in *Stain Tech.* **20.** 140, copied *verbatim*. Signed: A. P. BRADSHAW.] **2376**

I. A series of 4-aminophenylaminoheterocycle sulfones, analogs of 4,4′-diaminodiphenyl sulfone, has been made with the object of obtaining compounds having high antistreptococcal and antipneumococcal activity and low toxicity. Only those compounds which had at least one benzene nucleus with nitrogen in the para position to the sulfur were effective. Compounds in which the pyridyl, thiadiazolyl and quinolyl rings were substituted for one of the phenyl rings retained high antistreptococcal activity but not as great as 4,4′-diaminodiphenyl sulfone. All the compounds were less toxic than 4,4′-diaminodiphenyl sulfone. (Toxicity was tested by oral feeding of white mice. β hemolytic streptococcic infections and Type I pneumococcic infections were used. Tuberculotherapeutic activity of these compounds will be reported by W. H. Feldman and H. C. Hinshaw, Mayo Foundation and Mayo Clinic.)

II. The chemotherapeutic activity shown by a series of 4-aminophenylaminoheterocycle sulfones led to further investigations of other members of the series. 4-Aminophenyl-2′-aminothiazolyl-5′ sulfone (" Promizole ") has been prepared and was shown by Feldman, Hinshaw and Mann [*V. B.* **15.** 373] to have tuberculotherapeutic activity for a human strain of the tubercle bacillus in the guinea pig and to have a low degree of human toxicity. This compound and several others of the series are shown to have antistreptococcal activity.

CLARK, C. H. (1946.) **Sulfamerazine in paratyphoid disease of poults and chicks.**—*J. Amer. vet. med. Ass.* **109.** 279. **2377**

Three hundred week-old chicks and 56 week-old poults were given meal containing sulphamerazine at levels varying from 0·1–0·6%, followed in 24 hours by 0·02 ml. of a 24-hour broth culture of *S. typhi-murium*. 0·3% sulphamerazine or more significantly reduced mortality. The maximum effect was reached with 0·5% sulphamerazine in the meal, when there was a 12% mortality in the chicks and 19% in the poults, as compared with 99% and 97% respectively in the controls. There were no recurrences of the disease when the sulphamerazine was discontinued.—J. D. BLAXLAND.

SOLTYS, M. A. (1945.) **Chemotherapy of tuberculosis.**—*Nature, Lond.* **156.** 210–211. **2378**

Before the discovery of sulpha drugs some success was achieved in increasing resistance to TB. with a gold compound, sanocrysin. Sulphanilamide and sulphapyridine were of doubtful value even in experimental TB. in g. pigs. Another sulpha compound, promin, was successful in g. pigs, but was too toxic to be effective in man. A nitrogen derivative, kharash 1048, was also effective in g. pigs. Diasone appeared to be valuable and of low toxicity to human beings. Penicillin was an ineffective inhibitor of *M. tuberculosis*, but other mould products had inhibitory activity.—R. MARSHALL.

MINTON, J. (1946.) **Penicillin in treatment of common external eye infections.**—*Brit. med. J.* Sept. 7th. 324–326. **2379**

The principle external eye infections in

children are blepharitis, conjunctivitis and lachrymal sac infections, and in adults, conjunctivitis, chronic blepharitis and industrial injuries. The principal organisms associated, primarily or secondarily, with these diseases (staphylococci, pneumococci, Morax-Axenfeld bacillus and Kochs-Weeks bacillus) are sensitive to penicillin, which has given excellent clinical results. It has been applied as drops (1–2,000 units sodium penicillin per ml. sterile water), which retained 50% of activity after three weeks at room temperature, or as ointment (calcium penicillin in eucerin ointment base) which probably remained active for at least six weeks. No children but some adults had an allergic skin response to penicillin, treatment of such cases with penicillin was therefore discontinued.—R. SCARISBRICK.

KAKAVAS, J. C., & SCOTT, E. G. (1946.) **Penicillin blood-level determinations with a *Streptococcus dysgalactiae* resistant to normal blood inhibitors.**—*Science.* **104.** 327–328. **2380**

Str. pyogenes and *B. subtilis* cannot be used as test organisms for estimating the amount of penicillin in blood since they are inhibited by substances other than penicillin which are present in normal blood and to an even greater extent in the blood of infected persons. A strain of *Str. dysgalactiae*, isolated from a case of bovine mastitis, was found to be inhibited by penicillin but not by blood serum.

Various concentrations of penicillin in tryptose broth were obtained by the serial dilution technique; the test organism, grown for 18–24 hours in tryptose broth, was inoculated and the last tube of the series with no growth after 16–18 hours incubation at 37°C. was noted. A similar experiment with a solution containing an unknown quantity of penicillin was compared with this standard and the concentration of penicillin in the unknown solution was determined. Penicillin concentrations in blood serum down to 0·016 unit per ml. were detected. Since 0·03 unit per ml. is regarded as therapeutically effective, the method should be a useful clinical test.—R. MARSHALL.

HERRELL, W. E., & NICHOLS, D. R. (1945.) **The clinical use of streptomycin: a study of forty-five cases.**—*Proc. Mayo Clin.* **20.** 449–462. [Abst. in *Bull. Hyg., Lond.* **21.** 394, slightly amended. Signed: CHARLES WILCOCKS.] **2381**

The S unit of streptomycin is that amount which will inhibit the growth of a standard strain of *Bact. coli* in 1 cc. of medium. WAKSMAN [see *V. B.* **16.** 383] has proposed that the amount which will inhibit growth in 1 litre should be known as the L unit (= 1,000 S units). A G unit will probably be defined, when crystalline material becomes available, as one gramme of the material.

After injection of streptomycin the blood level reaches its maximum in 1–2 hours, but concentrations of 12–25 units per cc. may be built up by repeated injections; little of the streptomycin then administered finds its way into the faeces, and conversely, little of the streptomycin administered by mouth enters the blood stream. Oral administration, therefore, is not suitable for general infections, but may be useful for intestinal infections. Intermittent injection, every 3–4 hours (possibly every 6 hours) of doses sufficient to make up 1,000,000 to 2,000,000 S units in 24 hours, or continuous drip to the same amounts, are satisfactory by the intra-muscular or subcutaneous routes; for the former the concentration should be 125,000 S units per cc. of saline, for the latter 100,000. For continuous intravenous use total daily doses of 1,000,000 to 4,000,000 S units may be given in 2 litres of saline. For intrathecal injection, 100,000 S units may be dissolved in 5–10 cc. of saline, and the dose repeated at intervals of 24–48 hours. Streptomycin may also be nebulized and inhaled, 25,000 to 50,000 S units being dissolved in 1·0 cc. of saline, and inhaled to a total of 500,000 units *per diem.* For oral use from 500,000 to several million units may be given each day, divided into 4 doses.

The authors report on 45 cases treated with streptomycin. These included bacteraemia due to Gram-negative organisms (*Bact. coli*, *Salm. typhi*, *Brucella*, etc.). The results were good except that in two of the three patients with brucellosis the symptoms were not relieved though blood culture became negative. In 13 infections of the urinary tract there were two failures; many of these patients had more than one infection. There was one failure in five patients with bronchiectasis; in the remainder the infection with Gram-negative organisms was eradicated. Four cases of syphilis were treated; the dark-field examinations of three who at first gave positive results became negative, but relapse occurred in all cases. Results in cases of meningitis due to *H. influenzae*, and ozoena, were good; in the one case of typhoid fever the result was doubtful, but the amount of streptomycin given was small.

The largest total amount administered was 30,000,000 S units in a case of bronchiectasis, during a period of 30 days. No uncontrollable toxic effects were seen in any patient, but there were minor reactions at the site of injection, and sometimes chill, or cutaneous eruptions of urticarial type.

Further clinical studies are needed before the value of streptomycin can finally be assessed.

MORGAN, B. B., & CAMPBELL, H. M. (1946.) **Chemotherapy of Trichomonas foetus (Protozoa) in vitro.**—*Amer. J. vet. Res.* **7.** 45–51. **2382**

The literature on *in vitro* studies with therapeutic agents against *T. foetus* is reviewed and details are given of a standardized technique whereby the authors have tested 350 drugs.

The results are divided into six groups, and together with the pH of each drug during the test, are recorded in separate tables as follows:—252 compounds dissolved in 0·7% saline which killed *T. foetus* in 1 min.; saturated solutions of 71 compounds which did not kill *T. foetus* in 10 min.; 1% suspensions of six compounds which did not kill *T. foetus* in 10 min.; six compounds which killed *T. foetus* after varying exposures; solvents combined with eight compounds which killed *T. foetus* in 1 min.; and solvents combined with seven compounds which did not kill *T. foetus* in 1 min.—A. E. PIERCE.

WILLIAMSON, J., & LOURIE, E. M. (1946.) **Interference with the trypanocidal action of γ-(*p*-arsenosophenyl) butyric acid by *p*-aminobenzoic acid.**—*Ann. trop. Med. Parasit.* **40.** 255–264. **2383**

The trypanocidal activity of γ-(*p*-arsenosophenyl) butyric acid against both normal and tryparsamide-resistant trypanosomes has been confirmed. The therapeutic efficiency of the arsenical, in a dose of 0·5 ml. per 20 g. body weight, was, however, practically eliminated by a prior injection of 5 mg. *p*-aminobenzoic acid and this result was observed equally in mice infected with normal and in those with tryparsamide-resistant trypanosomes. Similar effects were found *in vitro*, trypanosomes which had been simultaneously in contact with γ-(*p*-arsenosophenyl) butyric acid and *p*-aminobenzoic acid were still alive 24 hours later, while those which had been in contact with the srsenical alone were destroyed within six hours.

The more common type of arsenical, such as tryparsamide, arsphenamine and mapharside was not antagonized by *p*-aminobenzoic acid. Glutathione interfered equally with the therapeutic activity of γ-(*p*-arsenosophenyl) butyric acid and of *m*-amino-p-hydroxyphenylarsenoxide (the partial oxidation product of arsphenamine).

It is suggested that *p*-aminobenzoic acid interferes with the trypanocidal action of γ-(*p*-arsenosophenyl) butyric acid by selectively limiting the admission of this type of arsenoxide into or on to the trypanosome cell. The authors consider that the essential lethal mechanism of the arsenical, as is the case with other arsenoxides, is an interaction between the arsenical and the sulphydryl-containing components of the trypanosome cell. —E. KODICEK.

JAQUETTE, D. S., & MARSDEN, S. J. (1947.) **Tests with mapharsen and metachloridine in the treatment of blackhead in turkeys.**—*Poult. Sci.* **26.** 218–219. **2384**

Neither of these drugs proved of value in the treatment of blackhead. There was no significant difference between the mortality among the treated and control groups.—C. HORTON SMITH.

RIGDON, R. H., & MARVIN, H. N. (1947.) **Effect of insulin on *Plasmodium lophurae* infection in ducks.**—*Amer. J. Hyg.* **45.** 185–190. **2385**

The effect of insulin on the parasitaemia in *P. lophurae* infections in ducks and the blood sugar levels has been studied and the results are contained in this paper. White Pekin ducks, 2–10 weeks of age were inoculated intravenously with *P. lophurae*. Counts of parasitized erythrocytes were made from stained smears. Insulin was injected intravenously and protamine zinc insulin subcutaneously in doses of 15 and 30 units each per kg. body weight. No significant differences in the course of the parasitaemia were evident between treated and untreated ducks when sufficient insulin to produce a severe hypoglycaemia and blindness was administered.—C. H. S.

TONKIN, I. M. (1946.) **The testing of drugs against exoerythrocytic forms of *P. gallinaceum* in tissue culture.**—*Brit. J. Pharmacol.* **1.** 163–173. [Author's summary copied *verbatim*.] **2386**

The effect of drugs on the exoerythrocytic forms of *P. gallinaceum* has been investigated using an *in vitro* technique. Explants of chick spleen infected with tissue forms of the parasite were grown in Carrel flasks in contact with a solution of the drug in a nutrient medium, and the effect of the drug on parasite and cell growth was observed microscopically.

The following compounds inhibited the growth of the parasite and were comparatively non-toxic to the macrophages: sulphathiazole, sulphadiazine, *m*-aminobenzenesulphonamidopyrimidine, streptothricin, streptomycin, and *p*-anisylguanidine nitrate. Quinine showed a slight antiparasitic activity but was toxic to macrophages. Mepacrine, stilbamidine, M.4430 (N_1-*p*-chlorophenyl-N_5-methyl*iso*propylbiguanide), sontoquin, pamaquin, and paludrine were very toxic to the cells and were inactive in the highest concentrations tolerated by the macrophages.

The antiparasitic activity of sulphathiazole could be inhibited by *p*-aminobenzoic acid, one molecule of the inhibitor corresponding to 270 molecules of the drug. No inhibition of the *m*-sulphonamide, *m*-aminobenzenesulphonamidopyrimidine, by *m*-aminobenzoic acid could be demonstrated.

When parasites, already grown in tissue culture, were exposed to sulphathiazole, the drug appeared to reduce the power of division of the

parasites. After 4 days' exposure to the drug no small forms were found and the larger schizonts became progressively more degenerate; after more than 4 days' exposure the parasites lost the ability to infect chicks.

The tissue culture technique may not be suitable for large scale routine drug screening tests, but would be useful for the further investigation of promising compounds.

AGRINSKIĬ, N. I. (1943.) Opyt izucheniya preparata S-55. [**Experiments with "S-55" in equine piroplasmosis.**]—*Veterinariya, Moscow.* No. 10–11. pp. 27–31. [See also KAZANSKIĬ—*V. B.* **15.** 375.] **2387**

Treatment with S 55 is recorded of eight horses naturally infected with *Nuttallia equi* and three with *B. caballi*, the drug being used either as an intravenous injection in a 2% solution or subcutaneously as a 20% suspension in oil. Of the treated animals, ten recovered and one died. Given in the incubation period to artificially infected foals, the drug failed to prevent a severe attack of disease; it is concluded that it has no prophylactic action.

No toxic symptoms developed in treatment and subcutaneous injection only caused a transitory inflammation of the subcutaneous tissue. It is concluded that the drug is more satisfactory than acriflavine.—U. F. RICHARDSON.

GREENBLATT, R. B., DEIBERT, A. V., FISHER, S., & CLOUGH, W. J. (1945.) **Treatment of granuloma inguinale with diramin: a new antimonial.**—*Vener. Dis. Inform.* **26.** 238–239. [Abst. from abst. in *Bull. Hyg., Lond.* **21.** 305–306.] **2388**

Diramin is an aqueous solution of the mixture resulting from the reaction between antimony catechol and tri-isopropanolamine in the presence of propylene glycol; it contains 8·5 mgm. of antimony per c.c. The product was used for the treatment of 14 persons with lymphogranuloma inguinale—a virus disease. The results varied from slight improvement to complete healing of the lesions. In a similar series of patients treated with fuadin rather better results were obtained. The interest of this paper lies in the fact that this was an attempt at chemotherapy of a virus disease.

ZICHIS, J., & SHAUGHNESSY, H. J. (1945.) **Successful treatment of experimental western equine encephalomyelitis with hyperimmune rabbit serum.**—*Amer. J. publ. Hlth.* **35.** 815–823. [Authors' summary and conclusions copied *verbatim.*] [See also *V. B.* **11.** 683.] **2389**

Fifty-five guinea pigs were treated with specific hyperimmune rabbit serum of 500 to 1,000 units when they became visibly sick following intralingual injections of Western equine encephalomyelitis virus. Of this number 67·3 per cent recovered. On the other hand, of the 41 guinea pigs used as controls, one recovered spontaneously and 40 died.

Serotherapy was less effective in rhesus monkeys, giving a recovery rate of 45·5 per cent against 0 per cent in the control group. However, these animals were treated with serum at the onset of fever following intracerebral injection of the virus. Since by this method of injection the virus produces a fulminating type of the disease which is obviously more difficult to treat, these results are considered significant.

A Western equine encephalomyelitis antiserum has been prepared by hyperimmunization of rabbits which is effective in treating the experimental disease even after the animals show evidence of central nervous system involvement. It is believed that the successful treatment of the disease in these experiments can be attributed to the use of adequate quantities of antiserum of high potency administered by a route which made the serum antibodies readily available to the animal.

I. BEIJERS, J. A., & VAN RAADSHOOVEN, F. H. (1945.) Strongyliden bij het paard en de kleine herkauwers. Klinische en therapeutische ervaringen met name van phenothiazine. [**Treatment of strongylosis in horses and small ruminants with phenothiazine.**]—*Tijdschr. Diergeneesk.* **70.** 23–29. **2390**

II. ABRAHAMSE, A. A. (1945.) Het nieuwe antiparasiticum phenothiazine en de toespassing er van bij de strongylosis van het paard. [**Phenothiazine in the treatment of strongylosis in horses.**]—*Ibid.* 7–22. **2391**

I. This paper is concerned largely with the natural history of equine strongylosis, including both small and large worms. The therapeutic effects of oil of chenopodium, carbon tetrachloride, allegan (Bayer) and phenothiazine are reviewed. Contrary to experience in England, the authors recommend doses of 30–60 g. of phenothiazine for full-grown horses and 45 g. for yearlings—large doses which may have a toxicity hazard. However, there was no toxicity in the authors' cases. Phenothiazine was also used with conventional result in a few cattle, sheep and goats.

II. The properties of phenothiazine are described and five case records of strongylosis in horses treated with it are given, including worm egg counts and larval viability tests. These show the well-established higher efficacy of the drug against *Trichonoma* spp. than against *Strongylus* spp. An unusual kind of *Trichonoma* larva encountered is described as having more than eight intestinal cells, upon which phenothiazine had a very strong action. Optimal doses of 30 g. for foals and 40 g. for adult horses are suggested.—J. E.

WARD, J. W., & SCALES, J. W. (1946.) **A preliminary report on use of lead arsenate for removal of the sheep tapeworm,** *Moniezia expansa.*—*J. Amer. vet. med. Ass.* **108.** 425–426. **2392**

As phenothiazine was ineffective in removing *Strongyloides* and *Moniezia* from some experimental sheep, it was decided to investigate the efficacy of lead arsenate as an anthelmintic for these parasites. Of 13 lambs with varying degrees of diarrhoea and, as shown by faecal examination, with mild to heavy infestations with tapeworms and *Strongyloides*, 11 were each given 0·5 g. and two were each given 1·0 g. of lead arsenate in a gelatin capsule. Each animal expelled 10–150 chains of *Moniezia* segments. Faecal examinations were negative for tapeworm eggs for four days after treatment and remained so 5–12 weeks. At the same time, diarrhoea subsided and did not recur eight months after treatment in 11 of the 13 lambs, which had been returned to permanent pasture a week after treatment. Two of the animals had to be re-treated five weeks after the first treatment. It is concluded that lead arsenate is useful in controlling tapeworms in lambs, since clinical symptoms subsided after treatment and recovery was uneventful.—J. N. OLDHAM.

CARLSTRÖM, B., & LÖVGREN, O. (1943.) Behandling av kronisk polyartrit med adenosintrifosforsyra. [**Treatment of polyarthritis with adenosine triphosphate.**]—*Skand. VetTidskr.* **33.** 523–541. [English & German summaries.] **2393**

In previous papers [see *V. B.* **17.** 48] the authors described the therapeutic effect of muscle adenylic acid and of adenosine triphosphate [A.T.P.] in rheumatic diseases, neuralgias and myalgias. More recently it has been found that the latter preparation is more effective than the former and that different batches of the latter vary much in effect. A.T.P. is difficult to prepare and cannot be standardized or checked by chemical tests. The material as made by the best known process contains only 75% of the normal active agent. It is administered intravenously or, preferably, intramuscularly in doses of 2–3 ml. daily for several days.

A.T.P. was administered to 17 human patients with chronic polyarthritis whose case records are given; these are arranged according to blood sedimentation times, as it was found that an abnormally slow rate became normal during A.T.P. therapy. The arthritic symptoms (swollen joints and pain) of 15 of the cases were made to disappear or substantially diminish, but in the other two cases only a slight and transient improvement resulted. All patients were put on a course of yeast on conclusion of the A.T.P. course, which lasted as long as 25 days.

Studies were made of the patients' blood pyruvic acid and citric acid content, but no significant connexion between these and A.T.P. therapy could be clearly established. The only way in which A.T.P. is known to act in the body is by an "action on the enzymatic phosphorylation processes resulting in an increased carbohydrate metabolism".

A few tests of the action of A.T.P. on animals are reported. Six dogs affected with arthritis of the "knee" joints were treated with A.T.P. and four were cured within one week, as were also two cows with arthritis of the hip and sacro-iliac joints.—J. E.

VOGELSANG, E. G. (1942.) El "prontosil" retarda la acción del veneno de la cascabel (Crotalus terrificus)? [**Does prontosil retard the action of rattlesnake venom** (*Crotalus terrificus*)?]—*Rev. Med. vet. Parasit., Caracas.* **4.** 79–80. **2394**

It is known that solutions of neutral red retard the action of curare. Prontosil red was used in an experiment involving two rattlesnakes of equal size and two dogs of equal weight. The first dog was bitten by one snake and died in 25 min. The second dog was bitten by the other snake and then injected around the same place with 10 ml. of prontosil red. This dog took two hours and 40 min. to die. No conclusions can be drawn until further experiments are undertaken. —I. W. JENNINGS.

ROTHMAN, S., SMILJANIC, A. M., & WEITKAMP, A. W. (1946.) **Mechanism of spontaneous cure in puberty of ringworm of the scalp.**—*Science.* **104.** 201–203. **2395**

With onset of puberty, the sebaceous glands of the scalp start to secrete a sebum which contains, in higher concentration than before, saturated fatty acids with selective fungistatic and fungicidal action on *M. audouini.* Highly active normal aliphatic monobasic acids having odd numbers of carbon atoms, including pelargonic acid, have been isolated from hair fat of adults. The "adult type" of hair fat does not kill the fungous spores within the hair, even when combined with a wetting agent or with a mild keratolytic agent such as sodium thioglycollate, but the hair fat prevents infection of new hair when the old hair is being shed. —J. M. ROBSON.

SOBERNHEIM, G. (1944.) Alkohol als Desinfektionsmittel. [**Alcohol as a disinfectant.**] pp. 48. Basle: Benno Schwabe & Co. 8vo. Sw. Fr. 1. Suppl. No. 1. Alkoholfrage in der Schweiz. [Reprinted from *Schweiz. med. Wschr.* **73.** 1280–1287, 1304–1306 & 1333–1336.] **2396**

The mechanism of disinfection by alcohol is still largely unknown, but in spite of its disadvantages it is perhaps the most valuable disinfectant for practical purposes. Propyl alcohol may be even better than ethyl alcohol particularly for the disinfection of hands. Alcohols kill spores only in the presence of water, and dry absolute alcohol on dry material is a poor disinfectant. The optimum alcohol concentration for the killing of spores is 50–70%, while 25% alcohol has no lethal action. The lethal action on bacteria is greater the higher the alcohol concentration. While alcohol is the best disinfectant for the hands, it is improved by the addition of soap. Commercial alcohol may contain spores of soil organisms which should be removed by filtration. Alcohol is not a good means of disinfecting instruments but heat sterilized instruments may be kept in spore-free alcohol until use. The addition of iodine to alcohol improves the disinfectant power, so that tincture of iodine is a good skin disinfectant. The author recommends a 4·5% solution of iodine in 70% alcohol rather than the 7–10% solution of iodine in absolute alcohol.

This booklet forms a useful summary and review on the subject.—E. BOYLAND.

See also absts. **2243** (streptomycin); **2252** (blood transfusion for bovine piroplasmosis); **2360** (enteritis in swine); **2433** (sulphonamides, etc., in U.S.A.).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

SAVAGE, W. (1943.) **A national milk policy.**—*Med. Offr.* **70.** 189–192. **2397**

The publication of the Government White Paper on "Measures to improve the quality of the nation's milk supply" [see *V. B.* **14.** 141] was suggested by S. as a suitable time to discuss the whole problem. He complains that much of our legislation has been piecemeal and that it does not go to the root of the problem.

The dangers of transmitting TB. and other diseases from the cow to man through the milk supply are discussed. S. criticizes the policy which allows a reacting cow to be turned out of one herd which is being freed from disease to find its way, in only too many cases, into another herd, and recalls his previous (1933) suggestion that all reactors be segregated into special herds where the milk is pasteurized under careful supervision.

The general measures advocated are:– (1) the compulsory pasteurization of all other than T.-T. milk (but even this should be brought under the pasteurization scheme as a long term policy), (2) the heat treatment of milk should be efficient and controlled, (3) the control of dairy cattle and the supervision of milk products should be the responsibility of the Ministry of Agriculture, (4) the suitability of milk for pasteurization should be decided officially, along with its distribution, (5) licences for T.-T. and other special brands of milk should be issued by the local authority and more control should be exercised over pasteurizing plants by county and county borough officials only, (6) the law should be amended so that the nutritional qualities of milk can be controlled, and (7) the examination of milk for the presence of tubercle bacilli should be confined to pasteurized milk so that the efficiency of the heat treatment may be controlled and the procedure of finding the cow excreting tubercle bacilli in the milk, compensating the owner and slaughtering the animal may be abandoned.—D. S. RABAGLIATI.

KOTHAVALLA, R., PHERWANI, M. S., & SESHAGHARYULU, E. V. (1945.) **Studies in sanitizing dairy utensils under Indian conditions.**—*Indian J. vet. Sci.* **15.** 33–38. **2398**

A comparative study was made of the efficiency of three kinds of detergents for cleaning dairy utensils, *viz*, (1) washing soda, as commonly used in modern dairies, (2) mud and cow-dung cake ash, described as the "indigenous" method and (3) bentonite (a kind of clay in powder form). The objects of the research were to find a suitable substitute for washing soda, which became very costly during the war, and to obtain further knowledge of the bactericidal effects of the "indigenous" method. Bentonite proved to be as good as washing soda and can be used with advantage for cleaning dairy utensils. It is cheaper and free from caustic effects, has no abrasive action on metals and is not hygroscopic. The "indigenous" method is inferior to washing soda and bentonite, but superior to simple washing with tap water and scrubbing with brush. Details of bacterial counts are tabulated and the mode of experiment fully described.—M. K. SREENIVASAN.

CLAYTON, S. A. (1946.) **Device for inspecting milk tubes.**—*Qd agric. J.* **62.** 356. **2399**

C. describes a device for use in cleaning the rubber tube connecting the claw of a milking machine to the metal milk line. The cleaner consists of an old metal cream-stirring rod to which is attached a metal disc that will fit into a milk tube with moderate tightness. The disc is forced through the full length of each tube and withdrawn in the reverse direction. C. states that the cleaner does not injure the rubber tubing and that its cleaning action is most effective.—J. D. S.

SCHÖNBERG, F. (1943.) Zum Einfluss des gelben Galts auf die Gelbfluoreszenz der Kuhmilch. **[Effect of acute mastitis on the yellow fluorescence of milk.]**—*Z. Fleisch- u. Milchhyg.* **53.** 215–216. **2400**

Reference is made to the work of PACKBIER [see *V. B.* **6.** 671] who advocated the testing of milk samples under the quartz lamp, and to HERRMANN (1937) and RAIBLE [see *V. B.* **8.** 322] who denied the advantage of testing milk in ultra-violet light. This controversy led to this being reinvestigated by the Veterinary College, Hanover.

For his examinations, S. used the *Hanauer Analysenlampe Modell S* 500, testing 147 milk samples 4–5 mm. deep in glass bowls. Forty-two of 43 mastitis milk samples had abnormal fluorescence with different colours ranging from grey-white to green, a brilliant yellow to green-yellow being found in the remaining 104 cases of good milk. In mastitis milk the colours were nearly always dull.

All 147 samples were also tested for content of cells, organisms and degree of acidity.

The yellow fluorescence disappeared with acidification of the milk (from pH 4) and with alkaline milk (pH 8). Milk from 128 animals whose feeding had been purposely lowered in quality had normal yellow fluorescence.

S. concludes that testing of milk samples in ultra-violet light is a useful device and states that milk with an abnormal fluorescence should be microscopically and bacteriologically tested, as it is likely to have come from infected udders.—P. S.

SCHÖNBERG, F. (1944.) Die Bestimmung, ob Ziegenfleisch oder Schaffieisch vorliegt. [**The differentiation of goat flesh from mutton.**]—*Z. Fleisch- u. Milchhyg.* **54.** 209–210. **2401**

In a law case S. was required to investigate whether boiled meat, fat and bones belonged to a goat or sheep.

The bones in question included three thoracic vertebrae, a piece of a rib and a complete half of the pelvis. The osteological findings were characteristic for goat. The foramen obturatum was elongated and the tuber ischii had neither the lateral pronounced process nor the caudal prolongation characteristic for sheep.

According to S. the differences in the pelvis and os femoris are great enough to make certain decision possible. He points out that the statement that the bone of a goat is more slender, longer, harder and more brittle than that of a sheep, cannot suffice for forensic purposes.—P. S.

BAMM, B. L. (1942.) Pishchevye toksikoinfektsii, vyzvannye stafilokokkom. [**Food poisoning produced by staphylococci.**]—*Zh. Mikrobiol., Moscow.* No. 1/2. pp. 91–94. [Abst. in *Biol. Abstr.* Sect. F. **19.** No. 7. 47, copied *verbatim.* Signed: H. LEVERNE WILLIAMS.] **2402**

Milk, cream and ice cream may contain cultures of pathogenic hemolytic staphylococci with sufficient enterotoxic ability to cause alimentary toxic infection. The usual organism is *S. aureus* the source of which may be either infected animals or persons in contact with the products. Control of the condition requires proper storage and inspection of the products and proper sanitary and veterinary control of animals and workers.

KAMENETSKIĬ, I. I., NOVAK, G. E., DONOVSKAIA, P. F., STEPANOVA, T. K., & KNIAZEVA, M. F. (1942.) Vspyshka ostrykh kishechnykh zabolevaniĭ, vyzvannykh *B. breslau.* [**Outbreak of acute intestinal diseases provoked by** *S. breslau.*]—*Zh. Mikrobiol., Moscow.* No. 1/2. 96–99. [Abst. in *Biol. Abstr.* Sect. F. **19.** No. 8. 38, slightly amended. Signed: H. LEVERNE WILLIAMS.] **2403**

An outbreak of acute gastro-intestinal disease was traced to pork which showed *B.* [*Salmonella*] *breslau* on culture. In addition, the pork showed *B. faecalis alcaligenes* and *B. cloacae.* This indicated either that the animal was ill on slaughtering or else that the slaughtering of the animal and distribution of its flesh took place under unsanitary conditions which resulted in massive pollution. Storage of the flesh 3 days at 18°C allowed growth of the organisms. Sanitary conditions, particularly in the handling of the meat for sausages and mince meat, are advocated.

BLOOD, D. G. (1945.) **Veterinary clubs in New Zealand.**—*Aust. vet. J.* **21.** 76–78. Discussion p. 78. **2404**

B. describes the organization by co-operative dairy societies of veterinary services for their members. The pioneer scheme in Taranaki involved a levy by the society of 1/20d. per lb. butter fat. This paid the veterinarian's salary and cost the farmer about 1s. per cow *per annum.* Another scheme at Eltham levied at a rate equal to about 1s. 6d. to 2s. per cow *per annum.* Visits cost members in Taranaki 5s., plus the cost of drugs used, and in Eltham, 7s. 6d. plus the cost of drugs. This service, also available to the owners of beef cattle and sheep, was known as "contract" work. Owners of beef cattle and sheep paid a flat rate per head of stock. All other work was charged for at "non-contract" rates, namely, 1s. per mile travelling to the farm, 10s. per hour whilst there and the cost of drugs used. Fees for "non-contract" work were payable to the society and funds from this source had, on occasions, resulted in there being no need for the levy from members. For a unit to be run economically, the veterinarian should be situated in the centre of a district with an adequate cow population (12,000 head) within boundaries 8–9 miles apart. The average number of cases attended was 10–12 per day. The salaries are not quoted in this article, but were considered good.

The work was seasonal, thus providing some respite after periods of intensive work. Provision was made for relief by *locum tenens*.—D. A. T.

LINON, G. (1946.) Les services sanitaires vétérinaires. (Dans le droit administratif.) [**French veterinary sanitary services.**]—*Rev. Méd. vét. Lyon et Toulouse.* **97.** 19–32, 77–84, & 125–130. **2405**

L. gives an account of the French veterinary sanitary services, which were brought into being as the result of a decree dated May, 1876, after which veterinary inspectors were attached to certain customs offices to examine imported animals; there was, however, no general organization of the services until 1909. The history of these services is given, together with innumerable decrees and ordnances under which they function.

The Director of the Veterinary Services is an employee of the State and comes under the Minister of Agriculture. The list of his duties includes the following:– the control of sanitary police and inspection of foods of animal origin, including meat inspection, preventive medicine and hygiene in general, control of subsidized measures against TB. and the improvement of animal housing. Special supervision carried out against the diseases of animals transmissible to man includes supervision of the milk supply and advice on the construction of abattoirs. Some of these duties were curtailed during the German occupation in the recent war.

In exceptional circumstances the Minister of Agriculture can order the appointment of one or more veterinarians to a district devoid of such officers. The Departmental Veterinary Services, as well as the Frontier Veterinary Inspectors (who consist of whole and part-time officials) are supervised by the Inspectors General of the State Service, of whom there are several, each appointed to a special district. Only the director of a departmental veterinary service is permitted to apply for the grade of Inspector General and he must hold a doctorate in veterinary medicine and have been a director of a departmental veterinary service for at least five years. The articles end with a description of the conditions of service, pension, indemnity rights and so on.—D. S. R.

PETERSEN, W. W. (1940.) Har Biblens Laere om de rene og de urene Dyr nogen hygiejnisk Begrundelse? [**Has the Bible teaching about clean and unclean animals any hygienic basis?**] —*Maanedsskr. Dyrlaeger.* **52.** 448–454. **2406**

Although Moses lived some 1600 years before we begin our reckoning of time, his laws regarding meat consumption have a sound hygienic basis.

The law forbidding the use of certain animals as food indirectly challenged man to make greater use of vegetable foodstuffs, a practice ordinarily recognized as healthy for people in hot countries.

P. shows that the pig and the camel, unclean among cloven-hoofed animals were ruled out on hygienic grounds, the pig on account of disease, and probably also on account of trichinella infection, which the ancients are believed to have known and feared. The prohibition of the use of blood is a sound hygienic precaution, as it was known that blood could be rich in disease germs. The general rule that herbivorus animals were clean and carnivorous animals unclean is hygienically sound.—F. E. W.

FLÜCKIGER, G. (1946.) Eidgenössische Tierzeuchengesetzgebung im Wandel der letzten 25 Jahre. [**Federal legislation on epidemic diseases of animals in the course of the last five years.**] —*Schweiz. Arch. Tierheilk.* **88.** 1–25. **2407**

This article has also appeared in booklet form and is reviewed in this issue [*V. B.* **17.** Abst. 2435].

See also absts. **2186** (TB. eradication in U.S.A.); **2187** (TB. in Palestine); **2205** (swine erysipelas in man); **2225** (TB. control in Denmark); **2258-2263** (leptospirosis from animals to man); **2264** (international control of F. and M.); **2312** (trichinosis); **2348** (disease control in Gt. Britain); **2417** (veterinary institute, Venezuela); **2434** (disease regulations in Switzerland); **2439** (bacteriological control of meat); **2440** (a thousand questions on hygiene); **2441** (handbook of disease control regulations in Switzerland).

ZOOTECHNY

CARSTENS, P. (1943.) Das Konstitutionsproblem in der Tierzucht. [**The problem of constitution in animal breeding.**]—*Züchtungskunde.* **18.** 139–147. **2408**

Fertility, longevity, health, resistance and utilization of food are all hereditary qualities which must be considered in judging the constitution of an animal. In the modern endeavour to raise the production of fat, milk, meat, eggs, etc., the need for a strong constitution may be overlooked, but this alone will enable the animal to produce in better quality and greater quantity. "Breeding for constitution" has not been considered seriously enough, and large-scale experiments into the subject are necessary. Age, race, sex and environmental conditions also influence constitution, and differentiation between hereditarily transmitted and acquired characters is not always easy or possible.

The following definition was officially adopted by a meeting of animal breeders and veterinary surgeons:– "In animal breeding constitution means the bodily condition of every individual animal which is hereditary in its foundation, but

is influenced by environment and the power of resistance. According to the power of resistance against external harm the constitution is called strong or weak."—C. AHARONI.

BRITO-BABAPULLE, L. A. P. (1946.) **Notes on the shoeing of Ceylon bulls by itinerant farriers.** —*Vet. J.* **102.** 262–263. **2409**

An account is given of the local tools and method of shoeing draught bullocks in Ceylon. Flat shoes of wrought iron are used. They are fixed in position by very large-headed wrought iron nails which are not driven into the hoof by hammering, but inserted into holes made by a bradawl. Shoes with a turned up clip in front are frequently used on the hind feet of cattle which are apt to drag the toes at slow paces. Photographs show the type of shoes, nails and tools which are used.—M. C.

ROBIN & PETROV. (1945.) Deux saisons de monte à la jumenterie de Tiaret (Algérie). [**Studies on sterility and pregnancy diagnosis in a stud of horses in Algiers.**]—*Rec. Méd. vét.* **121.** 161–176. **2410**

The authors describe their procedure for the routine examination of mares during the breeding season. They recommend that service be postponed until the Graafian follicle has reached a certain degree of softening, *i.e.*, when on palpation it is found to have become cyst-like, has thin walls and is easily depressed. Pregnancy is confirmed 50–70 days after service by the blood-gonadotropin test using rabbits as test animals.—A. T. C.

STRERATH, O. (1944.) Nachweis der Trächtigkeit beim Rinde. [**Detection of pregnancy in cows.**] —*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 53–55. **2411**

S. describes in detail the technique of rectal examination for the early diagnosis of pregnancy in the cow. He claims that a diagnosis of "probably pregnant" or "probably non-pregnant" can be given from an examination of the corpus luteum ten days after service. By the 30th day in the heifer and by the 35th day in the cow, it should be possible to detect in the uterine horn of the same side as the corpus luteum a fluid wave and foetus about the size of a hazel nut. S. considers that by the 42nd day, mistakes in diagnosis ought not to be made. The differential diagnosis of pathological conditions of the uterus is discussed.—ALFRED T. COWIE.

See also absts. **2326-2333** (artificial insemination); **2370** (massage of udder of sows); **2420** (buffaloes); **2436** (animal breeding in Sweden).

TECHNIQUE AND APPARATUS

WELLS, W. F. (1946.) **A method for obtaining standard suspensions of tubercle bacilli in the form of single cells.**—*Science.* **104.** 254–255. **2412**

The apparatus used for the production of single cell suspensions is described as follows.

"A 250-c.c. Erlenmeyer flask, containing 50 pyrex glass beads 4 mm. in diameter and 50 ml. of culture fluid, is rotated about its axis at an angle such that the top surface of the flask is horizontal. . . . Floating cultures of tubercle bacilli are carried . . . over the surface of the liquid itself, picked up on the film lining of the flask, and returned to the other edge of the liquid surface. An extensive, well-aerated cultural surface supplied with nutritive fluid is thus provided; the culture itself is broken up into a myriad of small patches. After several days' growth the culture begins to settle into the liquid, where it is subjected to a gentle grinding by the beads."

By this method suspensions containing 10^7–10^8 single organisms are obtained. Aerosol suspensions, sampled by the air centrifuge, gave counts corresponding to the number of tubercles developing in the lungs of rabbits.—R. E. GLOVER.

ANON. (1945.) **The Maltwood finder.**—*Microscope.* **5.** 268. **2413**

This instrument consists of a ruled mesh 50 units square, *i.e.*, consisting of 2,500 squares, each square bearing a pair of numbers indicating its position relative to the left hand vertical and upper horizontal margins respectively. The finder is mounted on the centre of a glass slide 3 in. by 1 in. It is used with a mechanical stage. The object to be recorded is located and after removing the slide, the finder is inserted and the numbers of the visible square noted. When the object is to be found again, the procedure is reversed.—L. M. MARKSON.

CORPER, H. J., & COHN, M. L. (1946.) **Contrast coloring of media by dyes in growing tubercle bacilli. Effect of dyes on growth of tubercle bacilli.**—*Amer. J. clin. Path.* **16.** 621–633. **2414**

In the preparation of selective media for growth of *M. tuberculosis* it is desirable to choose a dye which colours the medium but is not found in the liquid of condensation, so that the bacilli are not coloured.

In this article, detailed results are given of a number of dyes; in general, the blue and black dyes gave the most satisfactory results. Care must be taken to ensure that the dye used has no appreciable inhibitory action on the growth of a small amount of seed material. It may be possible to avoid toxic effects by combining dyes; the toxic effect of a brand of neutral red marketed as "Vital neutral red" in retarding growth was, for example, overcome by the addition of vital trypan-blue.—R. E. GLOVER.

CONN, H. J. (1946.) **Progress in the standardization of stains. Twenty-five years of cooperation with the U.S. Department of Agriculture.**—*Stain Tech.* **21.** 81–86. **2415**

This article relates the history of the U.S. Commission on the Standardization of Biological Stains from its early days, when its work was financed by the Chemical Foundation and when it was greatly helped by the active co-operation of the Department of Agriculture. The latter department provided the services of dye chemists and the facilities of the colour laboratory. Early work consisted mainly of the analysis and assaying of commercial dyes. Later on (1925) the book *Biological Stains* [now in its 5th (1946) edit.] was published. In more recent years, the Department of Agriculture contribution has been merely to provide laboratory space and equipment. Connexions have now been severed officially with the Department after 25 years, and it appears that in future the Stains Commission will acquire headquarters of its own.—I. W. JENNINGS.

REDER, W. (1944.) Die Feststellung des Ausblutungsgrades im Fleisch der Schlachttiere mittels Farbreaktion (Löfflerblau-Karbolfuchsin-Verfahren). **[Determining the degree of bleeding of slaughter animals by means of a colour reaction (Löffler blue—carbolfuchsine technique).]**—*Z. Fleisch- u. Milchhyg.* **54.** 181–182. **2416**

R. modified Schönberg's simple technique [see *V. B.* **17.** abst. 2162] into a colour reaction, by means of which it was possible to determine within 5 min. the degree of bleeding of the carcass. The reagent, the colour of which varied between light blue and dark blue, was made by mixing 0·1 ml. of Löffler's blue with 40 ml. of water, adding 0·05 ml. of diluted carbolfuchsine solution and shaking well.

In this method of testing, 3 g. of the muscle tissue were minced and placed in a test tube and 5 ml. of the reagent were added, the tube being well shaken. After allowing to stand 5 min. and shaking again colour reaction was clearly visible. With well bled meat the liquid remained blue. The worse the bleeding out of the meat, the greener the reaction becomes, with a brownish-green colour in badly bled meat.—P. SASSE.

See also abst. **2196** (media for TB.).

MISCELLANEOUS

ANON. (1945.) Instituto de Investigaciones Veterinarias de Venezuela. **[Institute of Veterinary Investigation, Venezuela.]**—*Cuad. verd. 3a Conf. interamer. Agric., Caracas.* No. 26. pp. 37. **2417**

The Institute was founded in 1933, but was restricted to diagnosis and teaching until 1940, when the present enlarged buildings, well equipped on modern lines, were opened. There are branches dealing with special investigations, animal pathology, biological products, chemical products and experimentation, and entomology. Contact with the field is maintained by 43 Regional Veterinary Officers and three Officers of Hygiene and Sanitation.

In 1937, the presence of equine infectious anaemia was established. Hitherto the disease has been considered to be due to *T. venezuelense.* A separate type of virus of equine encephalomyelitis, differing from the " East ", " West " and " Argentine " types, was isolated in 1938 and a vaccine provided. A vaccine was also provided for "paralytic" (blood-lapping bat-transmitted) rabies. *Chromobacterium violaceum* has been found to occur in Venezuela. *Eimeria deblieckí* from swine is reported. Brucellosis, known to be common in cattle, has been occasionally demonstrated in goats and more often in swine.

The usual vaccines are manufactured and issued. The curative properties of certain trypanocides have been investigated. Bayer 7602 has been useful against *T. vivax* in cattle. A list of publications is given.—R. MACGREGOR.

—. (1946.) **Programme of social and economic development in the Zanzibar Protectorate for the ten-year period 1946 to 1955. Sessional Paper No. 1 of 1946.** pp. 35. Zanzibar: Govt. Printer. **2418**

A programme initiated in 1942–43 and framed for the post-war years 1946–55 is described. Finance has been assisted largely by a block grant to Zanzibar of £750,000 from the Colonial Development funds.

Items of veterinary interest include projects for the survey of cattle diseases in Zanzibar and Pemba, for disease control, for the development of cattle industry and for pasture improvement. Professional and technical assistance in veterinary matters is to be obtained from Tanganyika Territory.

A grant to meet the cost of a survey of cattle diseases throughout the Protectorate was made in 1945. Particular attention was to be paid to tick-borne diseases and to trypanosomiasis, but bovine contagious pleuro-pneumonia, TB. and contagious abortion were also considered. Preliminary work with staff from Tanganyika Territory resulted in the discovery that *Glossina austeni* is present in the island and may be responsible for the trypanosomiasis that occurs. Disease control plans include the establishment of compulsory dipping areas and the construction of a large

number of dips. East Coast fever was confirmed on Pemba. The programme provides for the yearly immunization of stock against rinderpest.

Plans have been made for the development of the cattle industry and for soil conservation measures associated with the use of artificial fertilizers. It is suggested that grazing land in the vicinity of Zanzibar—never a very fertile area—has reached a low state of fertility.—S. B. K.

LAZARUS, A. J. (1946.) **Buffalo as a dairy animal.**—*Indian Fmg.* **7.** 247–250. **2419**

L. considers the buffalo in its relation to the dairy economy of India and replies to arguments advanced for suppressing them in favour of cows. Male buffaloes, if properly trained, can be useful draught animals. The buffalo can thrive on any kind of fodder and yields more and in some respects better milk than the cow. Some of the well-known breeds of Indian buffaloes are described, with data of their performance. The principles governing the management of a buffalo herd are given, together with a table of rations.

—S. P. BERI.

REPORTS.

I. AUSTRALIA. (1943.) **Queensland: Annual report of the Department of Agriculture and Stock for the year 1942-43.** [SHORT, R. P. N.] pp. 28. Items of veterinary interest pp. 15–16. Brisbane: A. H. Tucker. fcp. **2420**

II. AUSTRALIA. (1944.) **Queensland: Annual report of the Department of Agriculture and Stock for the year 1943-44.** [SHORT, R. P. N.] pp. 34. Items of veterinary interest pp. 18–21. Brisbane: A. H. Tucker. fcp. **2421**

III. AUSTRALIA. (1945.) **Queensland: Annual report of the Department of Agriculture and Stock for the year 1944-45.** [SHORT, R. P. N.] pp. 40. Items of veterinary interest pp. 17–23. Brisbane: H. Tucker. fcp. **2422**

I. Topics specifically mentioned include TUBERCULOSIS, BOVINE BRUCELLOSIS, BOVINE CONTAGIOUS PLEURO-PNEUMONIA, MCKENZIE RIVER DISEASE, losses from poison plants (*Trema aspera, Myoporum deserti, Salvia reflexa, Nicotiana glaucens, Threlkeldia proceriflora, Malvastrum spicatum, Verbesina encelioides*), TICK FEVER, the cattle tick and the buffalo fly.

Extension of the cattle tick into formerly "clean" regions was attributed to increased movement of cattle and resistance of the tick to arsenical dipping fluids. The buffalo fly continued to spread and is now found everywhere north of Townsville. MCKENZIE RIVER DISEASE of cattle is manifested by symptoms of incontinence of urine, photophobia, partial blindness and rapid emaciation. It is confined to yellowood (*Terminalia oblongata*) brigalow (*Acacia harpophylla*) scrub country. The stickfast flea (*Echidnophaga gallinacea*) is confined to a small region in Southern Queensland.

The report includes figures for the livestock population of Queensland and summaries of stock slaughtered.

II. TUBERCULOSIS in cattle continues to be a serious problem. On some farms a high incidence was found in calves a few months old. The Royal National Association of Queensland ruled that all cattle presented at the annual show and sales must be certified tested and free of the disease. MYCOTIC DERMATITIS of cattle has assumed serious proportions in some regions. Attention has been devoted to "arsenic resistance" of the cattle tick (*Boophilus microplus*). The buffalo fly (*Siphona exigua*) has continued to spread and has reached Clermont inland and Bowen on the coast. Investigations on control by means of spraying and trapping are being carried out in collaboration with the Council for Scientific and Industrial Research. Losses of sheep are reported after ingestion of *Threlkeldia proceriflora, Wedelia asperrima* and *Verbesina encelioides*. The report of the Agricultural Chemist refers to analyses of water for fluorine and the recording of some exceptionally high concentrations, *e.g.*, 40 parts per million. ENDEMIC FLUOROSIS in sheep is causing some concern. Among horses a peculiar form of blindness and an ataxic condition are reported. Other conditions mentioned include MASTITIS in dairy cattle, PLEURO-PNEUMONIA of cattle, BRUCELLOSIS in cattle and swine, PARATYPHOID and ERYSIPELAS in swine, DERMATITIS of the legs of sheep and internal parasites of sheep and cattle.

III. Two large areas (the city of Brisbane and the Darling Downs) were selected for intensive campaigns against BOVINE TUBERCULOSIS. MALIGNANT OEDEMA was suspected as the cause of severe losses in wether lambs following castration. DERMATITIS of the legs of sheep pastured on the black earth region of the Central Highlands was shown to be due to larvae of a trombidid mite (*Trombicula sarcina*). Dibutyl phthalate showed promise as a preventive agent. The buffalo fly continued to spread southwards and reached Springsure, Tambo and Baralaba inland and a point between Gladstone and Bundaberg on the coast. Trapping, with and without spraying with D.D.T., is providing control in dairy herds.

The arsenic-tolerant strain of the cattle tick (*Boophilus microplus*) appeared to be widespread. Applications of D.D.T. provided satisfactory control under experimental conditions. Deaths

of fowls were reported following ingestion of ants, *Monomorium rothsteini*, in the winged stage. Previously the ants *Chalcoponura metallica* and *Iridomyrmex detectus* were implicated in poultry mortalities. The pigeon fly, *Pseudolynchia canariensis*, was reported for the first time in Australia. Mortalities in pigs were seen following the ingestion of caterpillars of the butterfly, *Anaphaeis java teutonia*. McKenzie River Disease of cattle was shown to be caused by ingestion of the leaves of the yellowood tree (*Terminalia oblongata*). The kidneys of affected cattle are blue to slate-grey in colour and on microscopic examination have an unusual type of nephritis. Other poison plants mentioned are *Trema aspera*, *Hoya australis*, *Passiflora alba*, *Lantana camara*, *Myoporum deserti*, *Eupatorium* spp., *Gastrolobium grandiflora* and *Threlkeldia proceriflora*. Further survey work was carried out on Fluorosis in sheep and many artesian bores were found to contain toxic amounts of the element. Other conditions discussed include Mastitis, Brucellosis, Bovine Contagious Pleuro-Pneumoia, salmonella infections in swine, Ataxia in horses, respiratory infections in poultry, control of the stickfast flea and internal parasites of cattle and sheep.—H. McL. Gordon.

Canada: British Columbia. (1946.) **Fortieth annual report of the Department of Agriculture for the year 1945.** [Putnam, F.] pp. 186. Items of veterinary interest pp. 81–83 & 172. Victoria: C. F. Banfield. 8vo. **2423**

The province was free of any serious outbreaks of disease during the year. 473 cases of Mastitis were diagnosed. 4,375 cattle were tested for Tuberculosis and 54 reactors were found, all but three being destroyed. Calfhood vaccination for Bovine Contagious Abortion was increasing in popularity. 85 animals were examined for sterility. Over 10,000 sheep were examined for Foot Rot.

Considerable progress was made in herd improvement as a result of using better sires. Lists of Holstein, Ayrshire and Guernsey sires were available, and a list of Jersey sires was being compiled. A list of cows giving a ton or more butter fat contained 559 names. Seven "Parental Production Summaries" were compiled.

Over 100,000 cases of shell eggs, the largest number ever exported from Canada, were sent to Europe.—R. Macgregor.

India, Sind. (1946.) **Annual administration report of the Civil Veterinary Department for the year 1944-45.** pp. 12. Karachi: Govt. Press. 8vo. **2424**

The report is given in tabular form. The staff consists of the director, disease investigation officer, officer in charge of goat-virus production, three veterinary inspectors, 25 veterinary assistant surgeons and 20 compounders.

Table I deals with mortality from contagious and other causes. 429 cattle and 114 buffaloes died of Rinderpest, as against none the previous year. The incidence of Haemorrhagic Septicaemia was the same as the previous year. The main cause of mortality in equines was Surra, deaths being 97. There was practically no contagious disease amongst sheep and mortality from parasites was also much less. 126 goats died of Anthrax, 700 from Pleuro-Pneumonia, 160 from Foot and Mouth and 27 from Pox. 30 dogs died of Rabies as against 43, and 32 camels of Surra as against 11, in the previous year. There was an increase of Newcastle Disease and Fowl Cholera.

Table II deals with preventive inoculations. Over 4,000 bovines were protected against Haemorrhagic Septicaemia using serum alone or serum and vaccine, as against 3,000 the previous year. Over 11,000 goats were vaccinated against Pleuro-Pneumonia with a formalized lung tissue vaccine, as against 7,000 the previous year. 19,331 bovines were protected against Rinderpest, as against 2,858 the previous year.

Tables III and IV give details of animals treated and castrated in hospitals, dispensaries and villages by touring staff. Over 49,000 animals of all species were attended and over 6,000 castrations performed in hospitals; more than 45,000 animals were treated for contagious and non-contagious diseases and over 5,000 castrations performed in villages.

The year started with 141 approved stud bulls, six male buffaloes and four stallions. To these were added during the year 35 stud bulls; 19 bulls, one buffalo and one stallion died during the year. 4,640 cows, 225 buffaloes and 122 mares were served.

There were 16 cattle fairs and shows, as against 21 the previous year.

In the 13 slaughter houses for cattle and buffaloes and 25 for sheep and goats, 11,568 cattle and buffaloes, 87,894 sheep and 301,334 goats were slaughtered as against 19,484 cattle and buffaloes, 90,985 sheep and 364,620 goats in the previous year.

The total cost of the department was Rs 222,625, as against Rs 190,481 the previous year.—M. K. Sreenivasan.

The Gambia. (1946.) **Annual report of the Department of Agriculture for the year ending 31st May, 1946.** pp. 8. Items of veterinary interest pp. 5–6. Bathurst: Govt. Printer. **2425**

Animal husbandry is supervised by the Joint

Agricultural Departments of the Gambia & Sierra Leone. Largely owing to the high incidence of *Tr. congolense* among cattle, demonstrations of mixed farming over a period of years have met with practically no response throughout the Protectorate. Soldiers returning from service in Burma were being encouraged to adopt ploughing with oxen. A small piggery at Fajara has sold stock for successful crossing with local pigs. The imported stock has deteriorated as a result of inbreeding.

Over 3,000 lbs. of butter were produced. Pasteurizing equipment had been installed to avoid cream wastage.—S. BRIAN KENDALL.

BASUTOLAND. (1946.) **Annual report of the Department of Agriculture for the year ended 30th September, 1945.** pp. 21. Bloemfontein: D. Francis & Co. 8vo. Items of veterinary interest pp. 13–17. **2426**

Animal husbandry and disease control are supervised by the Department of Agriculture. The staff includes one veterinary officer.

As in most parts of Africa soil exhaustion is apparent and one of the principal objects of the Agricultural Department is to raise the fertility of arable land by the introduction of balanced farming. The use of kraal manure and material from village refuse heaps has given excellent results. Experiments to determine optimum dressings of manure are under way. Broad principles of soil conservation, described as the Agricultural Improvement Area Scheme, include limitation of areas under cultivation, manuring, rotation of crops and grass leys.

A livestock census indicated about 400,000 cattle, 500,000 goats, 1½ million sheep and 80,000 horses.

In spite of the worst drought since 1933 slaughter stock maintained condition. Fewer cattle (3,321, as compared with 3,423 for the previous year) were sold, but prices (from the Union) reached record levels. Fewer sheep were sold for slaughter. Horses sold were mainly condemned Government remounts.

Animal health remained good, but there was considerable loss of young stock from starvation. Inoculation statistics are included in a general table at the end of the report. About 30,000 ANTHRAX inoculations were made among cattle.

With regard to the improvement of livestock, the principle of importing European cattle breeds for improvement of local stock is being abandoned. Selected native cattle have been purchased as a foundation and an effort at improvement by selection is proceeding at Quthing. There is a horse improvement scheme in which selected stallions and jack donkeys are used. Improvement in pig breeding is limited by the unpopularity of pig-keeping. The poultry improvement scheme is reported to be progressing.

Auction cattle sales were in operation and a table of sales and prices realized during 1938–45 is included in the report.—S. BRIAN KENDALL.

NORTHERN RHODESIA. (1945.) **Game and Tsetse Control Department. Report for the year 1944.** [JONES, T. V.] pp. 20. Items of veterinary interest pp. 4, 5–7 & 12–13. Chilanga: The Department. fcp. **2427**

The game fence for RINDERPEST control no longer exists as a fence. A portion is being maintained as long as possible in the central section between Mukalizi and Londayila camps. The game-free area extending 25 miles south of the game fence is being maintained. After three years' operations the game-free zone has become a reality. The basic issue affecting game control will be whether Territories south of this zone continue defensive measures against the disease or take up an offensive role to eradicate it.

Details are given of the work in progress for tsetse control. Prior to 1944 the work in the Eastern Provinces consisted of using "resettlement areas" north and west of Fort Jameson and the Msoro area, where sleeping sickness appears to be endemic. The general measures being used are a discriminative bush clearing, game elimination combined with fencing and pressure of the indigenous population under re-settlement plans. War conditions have to some extent hampered the work.

In the Kafue area, by a scheme proposed in collaboration with the Director of Veterinary services it is hoped to reclaim 300 square miles of country from tsetse. This involves fencing, to separate the tsetse game area from the cattle area, the elimination of tsetse on the cattle side of the fence and along the fence by removing bush cover and game, the fly's normal food, the provision of water for game in the hinterland outside of the fence, to check game migration in search of water, and picketing to check tsetse being carried on travellers.—J. A. GRIFFITHS.

ZANZIBAR PROTECTORATE. (1946.) **Annual report on the Department of Agriculture for the year ended 31st December, 1945.** [WILLIAMS, R. O.] pp. 27. Items of veterinary interest pp. 16–17. Zanzibar: Govt. Printer. 8vo. Shs. 2s. **2428**

EAST COAST FEVER and TRYPANOSOMIASIS were the two worst diseases of the Protectorate, the latter being carried by *Glossina austeni* which is widespread. Treatment with phenanthridinium F.987 was effective. The Government Stock Farm flock of Rhode Island Reds had severe mortality from a disease resembling NEWCASTLE DISEASE. —R. MACGREGOR.

BRITISH GUIANA. (1945.) **Report of the Veterinary Division for 1944.** [FRASER, H. A.] pp. 9. fcp. Typescript. **2429**

Veterinary work was principally concerned with control of outbreaks of MANGE in horses, which was very common, and EQUINE TRYPANOSOMIASIS, investigation of problems of mineral deficiency, improvement of pastures with surveys of the existing flora and improvement of stock suitable for savanna conditions.

EQUINE TRYPANOSOMIASIS (caused by *T. equinum*) was treated with a variety of drugs but results were inconclusive.

A survey of various areas in the colony indicated impoverished soils and the need for mineral supplements. At the Ebini Downs livestock experimental station studies of mineral deficiencies—principally calcium and phosphorus—were conducted. A U.S.A. product (Swift's mineral feeding supplement) proved most satisfactory in improving condition in stock with symptoms of deficiency disease. Surveys of the indigenous grasses and legumes were carried out. It is mentioned that in some areas the carrying capacity of the savanna is 10–12 head of cattle to the square mile. Free range conditions are usual. Burning of the coarse grass-sedge association produces a crop of young and tender shoots on which stock feeds readily.

Zebu bulls were being imported from Brazil, and cattle of the Holstein type, Berkshire pigs, Barred Rock poultry and Black-headed Persian sheep had been introduced. Breeding records were poor for poultry and sheep.—S. B. KENDALL.

BRITISH GUIANA. (1945.) **Administration report of the Director of Agriculture for 1944.** [DASH, J. S.] pp. 26. Items of veterinary interest pp. 20–23. Georgetown: Govt. Printers. fcp. **2430**

Conditions in 1944 were described as favourable for agriculture. Livestock breeding in the past years had lagged behind crop production largely owing to failure to accept the recommendations of the Department and to provide funds for the development of the industry. With help from the Colonial Development and Welfare Funds, however, progress was expected.

It was stressed that in the development of the livestock industry breeding improvement was not of itself sufficient. Breeding and nutrition march hand in hand.

At the Ebini Downs Livestock Station on the Berbice River, investigations into the problems of animal husbandry suggested that an area of about 2,000 square miles of infertile sandy soil might become available for beef cattle. The use of Zebu stock, improvement of the present pasture and the use of mineral supplements were all necessary to attain this end. There was an urgent need for increased production of beef cattle in the interior savannas. Of 6,743 beef cattle slaughtered in Georgetown, 1,610 were imported from Brazil. The livestock return showed a cattle population of 171,719. Statistics for various animal products are given. Milk for Georgetown was sold through a Government Milk Depot. Measures for improvement of various types of stock included competitions for dairy cows, held in most districts, and the establishment of more breeding centres. Bulls used were principally Holstein and Holstein × Zebu.

The Government farm at Georgetown was in charge of a Livestock Officer provided under the Colonial Development and Welfare Scheme. He was responsible also for advisory work in animal breeding in the coastal area. Cattle at the farm included Holstein, Red Poll, Zebu, Creole and their crosses.

Barred Rock and Rhode Island Red poultry were maintained and pure bred stock distributed to the public. The availability of meat and bone meal for feeding assisted egg production. An electric incubator and brooder were run at full capacity. Pigs continued to do well and there was a good demand for Berkshires as breeding stock. The pig census for the Colony showed a population of over 45,000. Meat and bone meal for pig feeding was imported from the Argentine.

The importation of Black-headed Persian sheep had not been entirely successful. There had been much trouble with FOOT-ROT and from parasite infection.

At certain times there was a shortage of animal feeding stuffs and sale of cotton seed meal and linseed oil meal was controlled by the Government.

Balanced rations for dairy cattle and for poultry were devised and sold by the Government as "dairy meal" and "layers' mash". Meat and bone meal was sold by the Government as a "pig supplement". Trials were commenced for the production of a balanced pig food.—S. B. K.

U.S.A. (1945.) **Report to the Montana Livestock Sanitary Board, December 1, 1944 to November 30, 1945.** [BUTLER, W. J.] pp. 20. 4to. Mimeographed. **2431**

Livestock were remarkably free of disease. Eight cases of BRUCELLOSIS in horses were reported, but there were no cases of GLANDERS or DOURINE, which have been eliminated. There were more outbreaks of EQUINE INFLUENZA than in 1944, but only 12 cases of EQUINE ENCEPHALOMYELITIS. Some cases of EQUINE INFECTIOUS ANAEMIA were reported.

Of 647 cows examined, 200 were found to be infected with MASTITIS. No cases of ANTHRAX

were reported. The whole of Montana remains a Modified Accredited Tuberculosis-Free area certified by the U.S. Department of Agriculture. Fourteen animals reacted to tests for TUBERCULOSIS, six in a herd in which an imported bull was found to have generalized TB. The other eight cases were non-lesion reactors or skin lesion cases. Of 12,088 dairy cattle tested 0·0004% were infected.

No cases of JOHNE'S DISEASE were recorded in 1944–45.

6,184 cattle were vaccinated against BACILLARY ICTEROHAEMOGLOBINURIA. This is the most important cause of losses among bovines.

BALDWIN [see *V. B.* **16.** 154] considers *Haemophilus bovis* is the cause of PINK EYE. An experiment is in progress with a vaccine made from a culture of this organism. Isolated cases of BLACKLEG occurred. Of 49,324 cattle tested, 4·62% were positive for BRUCELLOSIS. One case of ANAPLASMOSIS was reported in an imported Brahmin bull; no cases of LEPTOSPIROSIS among cattle were reported. There were two cases only of BOVINE MALIGNANT CATARRH and isolated cases of MALIGNANT OEDEMA. There were no cases of PSOROPTIC or SARCOPTIC MANGE but a few isolated cases of COCCIDIOSIS.

PULMONARY EMPHYSEMA [ASTHMA] does not appear to be infectious, but there was an increase in the number of cases. The cause is not yet known.

There was an increase in the numbers of outbreaks of PODODERMATITIS [FOOT-ROT].

URINARY CALCULI were more frequently reported. Research on the cause was being made.

There were no outbreaks of SHEEP SCAB. FOOT-ROT occurred in four flocks and involved the inspection of the feet of large numbers of sheep. Copper sulphate solution was used in treatment. *Trichostrongylus* caused losses in Eastern Montana and the tapeworm *Monezia* caused losses among lambs. Phenothiazine in salt was fed for the former and copper sulphate with nicotine for expelling the tapeworm. No nodular worm (*Oesophagostomum columbianum*) infections occurred. The 79 cases of SWINE ERYSIPELAS reported were a slight increase. Living organisms may only be used by a veterinarian to control outbreaks. There were ten outbreaks of SWINE FEVER. Worm infestation and various other conditions of swine were also treated. There were no outbreaks of RABIES. A number of investigations on wild animals, game birds and fish were carried out for the State Fish and Game Commission. A Montana Poultry Improvement Board was established. Disease control measures remained under the control of the Montana Livestock Sanitary Board. A veterinarian was to act as Poultry Specialist and to control PULLORUM testing and other measures under the Montana Poultry Improvement Board. State meat inspection was carried on at eight abattoirs and Federal meat inspection was maintained at four abattoirs. Many municipalities and cities had no meat inspection of their own and became the dumping ground of unsound meat and meat products.

A total of 53,212 pathological specimens were examined and of these 47,485 were negative. BOVINE CONTAGIOUS ABORTION (49,324 examinations and 4·62% positive) was the most important disease.

Field work included 1,974,206 animals and 37,773 birds inspected. The animals inspected included 19,979 horses, 142,190 cattle, 1,396,398 sheep, 157 goats and 63,239 pigs.—J. A. G.

Extracts from annual reports of Agricultural Experimental Stations, U.S.A. 2432

[The matter given here is a bare outline of the work done. When papers by the staffs of these stations are published, abstracts are prepared from them and included in the *Veterinary Bulletin* as a matter of routine. Details of the titles of these reports and of relevant papers contained in them will be found in the *Index Veterinarius*.]

KANSAS, 1942–44.—A study was made of calcium requirements for pigs when the phosphorus level in the ration was 0·3% and adequate vitamin D was present. Tests showed that neither 0·3% nor 0·4% calcium was adequate. Symptoms included loss of appetite, crooked legs, lameness and partial paralysis. In studies on reproductive physiology it was found that ovarian development from the injection of sex hormones resulted in reduction in the size of the glands, that pituitary glands from castrated fowls were more active in producing gonadotropic hormone than normal ones, and that stilboestrol, in doses of 5·5 mg., stimulated growth of the genital tract of young female chicks. Birds that received male sex hormone had smaller testes than normal birds.

The possible synergism of vitamins A and E was suggested when it became evident that birds fed a synthetic diet deficient in vitamin E required vitamin A in greater quantities to make up for the deficiency in vitamin E.

The use of liquid soap has been found efficacious in destroying MASTITIS streptococci on cows' teats. Cellular response in circulating blood to injections of tuberculin as previously noted was studied on four tuberculous and three healthy cows. No difference in the blood pictures of the two groups was observed. There were 1,032 autopsies and 28,452 agglutination tests for BOVINE CONTAGIOUS ABORTION. Copper sulphate solution for drinking is said to have given satis-

factory results in treating *Trichomonas* infection, but not *Hexamita* infection. BLACKHEAD in turkeys was treated experimentally after diagnosis of the disease by means of an opening through the peritoneal wall. Treatment was with a dose of 0·006 g. of mapharsen (metarsen) given intravenously to 30 turkeys. It is said the drug will cure 90% of birds treated. Field investigations of ANAPLASMOSIS were made to determine the extent of the disease, the diagnosis of carriers and a method of immunizing susceptible cattle. In treatment, sodium sulphathiazole had no marked effect. Sulphapyridine had no effect given *per os* in one cow. ANAPLASMOSIS occurred in three splenectomized calves, following inoculation and two recovered. A similar disease occurred in pigs, but no parasites were found. There was severe ANAEMIA. The disease was not transmissible. Leptospira infections were noted in man, dogs, cattle and pigs. Of 119 specimens examined, about 16·8% were positive for RABIES; altogether 501 specimens were examined. In a FISTULOUS WITHERS and POLL EVIL investigation an extremely anaerobic organism has been isolated in a high percentage of cases. BOVINE LYMPHOGENOUS LEUCAEMIA was being investigated. KERATITIS of cattle was investigated. No useful results were obtained in preventing transmission of the disease between incontacts. Experiments indicated that soya bean meal could be used as a substitute for meat scrap and powdered milk in efforts to maintain resistance of growing chicks to *Ascaridia galli*.—J. A. G.

MAINE, 1944–45.—Records of treatments of MASTITIS quarters with sulphanilamide in oil or tyrothricin were not very promising. Re-infection after apparent recovery, frequently occurred. Two thousand calves were considered in an analysis of calfhood vaccination as a means of controlling BOVINE CONTAGIOUS ABORTION. In 250 "B" herds, in which calves were vaccinated and adults were negative to the test, 89% of the vaccinated calves of all ages were negative to the last recorded blood test, 7% were suspicious and 4% were reactors. 47% of these vaccinated animals became negative within 12 months, 35% within 12–24 months, 14% within 24–36 months. Under State and Federal supervision, vaccinated animals were required to be disposed of if they did not clear within 18 months of vaccination. In the 50 "C" herds, in which calves were vaccinated and adults were infected, 82% of the vaccinated calves became negative and 18% remained positive or were suspicious. It was found that semen could be diluted and transported to any part of the State and that samples from some bulls became more active after dilution with egg citrate diluent and storage. A wettable insecticide powder containing 20% D.D.T. was used at the rate of 10 lb. of dry powder to 100 gal. of water for the control of flies in dairy barns, being sprayed with a power-driven sprayer. Four applications at intervals of three weeks kept the fly infestation under control. Two applications to a heavily infested manure pit appeared to be very effective. Cattle were not adversely affected.—J. A. G.

MASSACHUSETTS, 1944–45.—Synthetic thyroprotein fed continuously for 21 days to ten milking cows increased the milk yield. At the end of the 40th week of lactation the yield was 277 lb., as compared with 162 lb. at the previous lactation. Cows fed the hormone irregularly did not respond in the same way. In the group fed the hormone continuously there was loss of weight amounting to 50 lb. a month while lactating and also some interference with reproduction, twice as many services being necessary for conception. To a lesser extent this applied to groups of cows fed the hormone irregularly. An analysis of the milk from the college herd when the pasture grasses were mature and the cows were receiving ground grains at the rate of 1 lb. for each 6 lb. of milk produced, revealed a content of 18·4 mg. ascorbic acid, 1·1 mg. nicotinic acid, 3·66 mg. pantothenic acid, 1·37 mg. riboflavin and 0·44 mg. thiamine per litre. This was below the dietary allowance recommended by the National Research Council, more ascorbic and nicotinic acid being required to meet the recommended allowance for infant feeding. Tests showed that milk exposed to sunlight on the consumers' doorstep was likely to lose a large amount of its ascorbic acid and riboflavin. Commercial goats' milk in winter contained on an average 4% fat, 6·5 mg. ascorbic acid, 2·96 mg. nicotinic acid, 3·38 mg. pantothenic acid, 1·25 mg. riboflavin, and 0·47 mg. thiamine per litre, showing the value of goats' milk as a source of these vitamins; the average bacterial count was 1,300 per ml. Tests of goat's milk from various sources showed an average of only 3,500 bacteria. Fat content varied from 2·2% to 6·5% and averaged 4·3%. The riboflavin content varied from 1·24 mg. per litre in stall-fed goats to 1·02 mg. in milk from goats at pasture.

In *S. pullorum* INFECTION eradication work carried out by the Poultry Disease Control Service, 975,041 tests were made, with 0·12% reactors. 93% of birds tested were in 100% tested non-reacting flocks. 3,801 specimens (mainly poultry) were examined by the diagnostic service. COCCIDIOSIS (121) heads the list of diseases diagnosed. INFECTIOUS BRONCHITIS (49), FOWL PARALYSIS (36), FOWL CHOLERA (29) and TUMOURS (70) are among other diseases mentioned. 400,000 birds were inoculated against INFECTIOUS BRONCHITIS. The most satisfactory results were obtained in birds

10–14 weeks old and inoculated during June, July and August. The procedure was not free from danger of disseminating the disease.—J. A. G.

South Carolina, 1943–44.—Results showed that cows could be bred by artificial insemination up to 36 hours after the onset of oestrus, using freshly collected semen and semen that had been stored in the refrigerator at 34°–39°F. up to 24 hours. There was an important increase in calf yield, as compared with results from natural breeding. In the period 1920–33, natural breeding, with 2·22 services per conception, produced about 44% pregnancies. When cows were inseminated artificially within 24 hours of the onset of oestrus, a better rate of conception was obtained than with natural breeding. [Comparative figures are not given.] The semen had to be protected against rapid fluctuations of temperature when collected and during storage.—J. A. G.

Texas, 1944.—Feeding experiments in growing chickens showed the importance of an adequate supply of protein, of trace minerals and of vitamin A in preventing losses. The tube test is still utilized in testing against *S. pullorum* Infection. Liver fluke control experiments indicated the value of hexachloroethane mixed with bentonite, when properly prepared. In the investigation on Keratitis or Pink Eye in cattle, the condition was at first thought to be a rickettsia infection, but subsequent work suggested that it was due to a pleomorphic diplobacillus belonging to the genus *Haemophilus*. Antibodies occurring in the blood serum of recovered animals explained the difficulty of reinfecting experimental animals that had recovered from an attack of the disease.—D. S. R.

West Virginia, 1942–44.—In studies on Avian Leucosis an attempt was made to determine the relationship between this condition and reproductive disorders, but insufficient work was carried out for definite conclusions to be drawn. Phenothiazine was given to 28 ewes for 11 months as a 1 : 14 phenothiazine-salt mixture, the ewes each consuming 0·53 lb. of the mixture each month. As a result of this treatment satisfactory control of parasites was attained. Cross-breeding of turkeys was not found to increase fertility but increased the hatchability of the fertile eggs. Tests with thyroprotein were made on two groups of three Holstein cows which were fed 15 g. daily for four week periods in a reversal feeding trial, the whole test lasting 16 weeks. Milk production increased 5–20% and total fat production 25–50%. The results of a study of the relationship of milk production with the development of Mastitis indicated that high production was not a primary cause of the disease. The phospholipoids in milk are the portion affected when oxidized flavour develops.—T. E. G.

BOOK REVIEWS

Hutyra, F., Marek, J., & Manninger, R. (1946.) **Special pathology and therapeutics of the diseases of domestic animals.** [Edited by Greig, J. R. (Ph.D., M.R.C.V.S., F.R.S.E., Director, Moredun Research Institute, Edinburgh, with the collaboration of Mohler, J. R. (V.M.D., D.Sc. Chief, United States Bureau of Animal Industry), & Eichhorn, A. (D.V.S., Formerly Chief, Pathological Division, United States Bureau of Animal Industry).] 3 vols. pp. xvi + 962, xi + 704 & xi + 762. Numerous figs. London: Baillière, Tindall & Cox. 5th English Edit. £7 7s. **2433**

The fifth English edition of this work, the first to appear since the beginning of the war, has suffered as a result of the very difficult conditions under which it was prepared and by the delay in publication caused by paper and labour shortages. As a result the information is not as up to date as it might have been. Very important advances in knowledge made during the war years are not included: for example, no mention is made of the uses of the sulphonamides, penicillin and other new antibiotics, D.D.T., etc.

The first volume deals with infectious diseases; it is arranged in the same way as the previous edition and contains very little new information. The chapters on rinderpest, feline infectious gastro-enteritis, leptospirosis, Newcastle disease and trypanosomiasis especially require revision. Some important diseases receive no mention, for example, listeriasis in sheep. Trichomoniasis in cattle is dealt with as a subsection of the chapter on brucellosis. Mistakes are bound to occur in such an extensive work, but one which is particularly unfortunate is the statement on page 329 that Newcastle disease is indigenous in Australia.

The manner in which the various diseases are sub-divided in the three volumes is capable of improvement and it is suggested that this be effected in the next edition. Many examples of clumsy arrangement could be given, but one or two will suffice. Volume I deals with infectious diseases and in it chapter 9 of section I deals with influenza in horses, cattle and man. Swine influenza is not mentioned in that section, but is dealt with in volume II in section III, which is headed "Diseases of the bronchi". Again, coccidiosis and blackhead are dealt with in volume II, section V, under "Diseases of the stomach and intestines" and not in volume I section VI, which

is headed " Infective diseases caused by protozoa". A more systematic arrangement would make for easier reference, a matter of some importance in a three volume work in which each volume has its own index but there is no complete index to the whole.

Nevertheless, the book remains the most complete work of reference in the English language and its reappearance will be warmly welcomed. A publishers' note announces that it is hoped to produce addenda from time to time which will bring the matter up to date.—M. C.

FLÜCKIGER, G. (1946.) Eidgenössische Tierseuchengesetzgebung im Wandel der letzten 25 Jahre. **[Swiss federal animal disease legislation during the past 25 years.]** pp. 26 + 18 pp. of photographs. Berne: Federal Veterinary Office 8vo. Sw. Fr. 3. **2434**

This is a brief survey of the achievements of the Swiss Federal Veterinary Department in the field of animal disease control during the last 25 years, from the time when (at the New Year, 1921) the 1917 federal law for the control of animal epizootics came into operation. The publication is intended to encourage and aid the canton veterinarians in their work and includes many pages of portrait photographs of these officials from 1921 onwards.

The livestock diseases which were to be given attention from the outset were those that (1) by spreading, caused general economic loss, (2) could not be fought by the animal owner unaided and (3) were a threat to human health.

The nature of federal intervention in the control of bovine TB. since 1896 is reviewed. No great progress was made until an enactment of 1942, whereby both clinical cases and animals reacting to the tuberculin test became subject to removal from herds enrolled in the control scheme; the principle of compulsory enrolment was applied to geographical units selected for active control measures, and certain financial inducements for mountainous districts were forthcoming from the federal source. As a result of this revised scheme [full details not given], by 1945 every canton was enrolled and 20,000 herds with 170,000 cattle were included. A few instances of success are cited: *e.g.*, 90% of the valley herds of St. Gallen and 64% of the herds in Graubünden had become TB.-free.

Progress in control of bovine brucellosis has been less spectacular. Vaccination by " strain 19 " was only provided for officially in April, 1945.

The designation *Schweineseuche* [swine plague] was removed from the list of animal epizootics in 1941, when it became officially regarded as a secondary manifestation of specific infections.

In 1941, an important decision was made to set up a foot and mouth disease vaccine preparation laboratory alongside the municipal abattoir at Basle. This has been done and this institution is now regarded as an important weapon in the international control of this disease.

Equine infectious anaemia was made notifiable in 1943 and a study commission was set up with the aim of isolating or identifying the causal agent, preparing an immunizing substance and perfecting diagnosis.

In 1944, the campaign against ox warble flies was made obligatory to cattle owners, who had to pay half the cost: this was the first instance in Switzerland of a livestock disease legislation making farmers liable in part for the cost of a campaign. Voluntary effort had reduced damage from ox warble flies from 12·6% in 1936 to 7·6% in 1941, so that to complete the eradication such measures were fitting. An alteration in the federal law had to be made to introduce this, the point at interest being the official acceptance of chemotherapy as an approved disease control tool.

In addition to direct measures against diseases, the department has also issued regulations for controlling the quality of biological products, the transport of livestock, disinfection, refresher courses for " official " veterinarians (546 out of 700 veterinarians in Switzerland had taken part in these courses by the end of 1944), the licensing of livestock dealers and importation of livestock.

As to the near future, the use of a state animal insurance scheme in conjunction with the various disease control schemes is stated to be desirable, as are certain additional regulations to accelerate results in the control of bovine TB. Some progress has recently been made with regard to the establishment of new federal veterinary research laboratories on experimental farms. Livestock disease remedies will probably be regulated.—J. E.

KALDÉN, J., J., SIXTENSSON, S., INSULANDER, N., & LINDAHL, T. (1946.) Husdjursaveln i Mälardistriktet, Stockholm, 1946. **[Livestock breeding in the Mälaren district of Sweden.]** pp. 294. Numerous figs. & tables. Uppsala: Almqvist & Wiksells Boktryckeri AB. 8vo. **2435**

This booklet is a descriptive survey of current progress in the breeding of horses, cattle, sheep and swine in the Mälaren district of Sweden, which comprises the provinces of Stockholm, Uppsala, Södermanland Önebro and Västmanland. Each of the authors contributes on one of the four species of animal. Representative specimens of the various breeds or strains are described from the herd book aspect and illustrated by photographs.

A final chapter gives statistical figures on the

livestock population of Sweden in general and of the Mälaren provinces in particular.

This is one of a series of similar books to be issued under the auspices of the *Skandinaviska Kreaturförsäkringsbolaget* [the leading and very active Swedish animal insurance company.]—J. E.

BURNET, F. M. [M.D., F.R.S., Director, Walter & Eliza Hall Institute of Research in Pathology and Medicine, Melbourne, Australia]. (1946.) **Virus as organism. Evolutionary and ecological aspects of some human virus diseases.** pp. 134. Cambridge, Mass.: Harvard University Press. 8vo. $2.00. **2436**

The necessity for consideration of a disease from a general biological point of view rather than from a merely pathological aspect has not always had universal acceptance, far less has the necessity for consideration of the infective agent as a living organism as dependent for its existence as its host on a means of continuous survival. CHARLES NICOLLE favoured this view, as is evident from his book "*Destin des maladies infectieuses*", and BURNET now stresses the importance of this outlook with particular reference to virus diseases.

The basic interpretation of virus disease that he has adopted is that viruses are micro-organisms, that they reproduce by replicating their structure at the expense of suitable atomic groups of the substance of the susceptible cell, that they can vary, with the variant probably arising by a process analogous to gene mutation in higher forms and that a virus species, like any other living species, must have found a way of indefinite survival. After discussing these points for viruses in general, B. considers some of the more important virus diseases of man from the point of view of the ecological interaction of the two species, virus and man. The diseases dealt with are herpes simplex, poliomyelitis, psittacosis and related infections, smallpox, alastrim and vaccinia, yellow fever, and influenza. Although these diseases are all virus diseases of man, the book is none the less valuable to the veterinarian, as the main theme is applicable to all virus diseases whether of man, animals or birds and the author's lucid exposition is bound to stimulate the reader to reconsider his own problem on similar lines.—W. M. HENDERSON.

KOLLER, R. [Dr. med. vet.] Die Porphyrine in der Tierheilkunde. [**Porphyrins in veterinary science.**] pp. 202. 8vo. [N.B.—No date given, also no publisher or price.] **2437**

The physical and chemical properties of the porphyrins are described, fluorescence and absorption spectra being emphasized as important for identification. Their physiological significance is then discussed; they are essentially necessary for the formation of respiratory pigments and are widely distributed in nature. Diseases in which the porphyrin metabolism is deranged in man and animals are discussed. In many of these diseases in man, there is an increased excretion of these substances, but it is not known whether the same applies to animals. The therapeutic value and toxic effects are given. Their distribution in animal tissues is detailed. Each chapter has a good bibliography, but there is no index.

—J. M. ROBSON.

NÉVOT, A. [Chef du Laboratoire de Contrôle des Fabrications Carnées au Service Vétérinaire Sanitaire de la Seine]. (1947.) Contrôle bactériologique pratique des denrées alimentaires d'origine animale. (Viandes fraiches, produits de charcuterie, conserves, lait, oeufs, coquillages.) Techniques—résultats—interprétation. [**Practical bacteriological control of food products of animal origin.**] pp. 363. 4 plates, 102 figs., 1 appendix., 14 refs. Orleans: Editions médicales Flammarion. 8vo. **2438**

According to the author, the object of this essentially practical work is to enable distinction to be made as quickly as possible, 48 hours at the most, between good and bad food stuffs. This object is well achieved.

The book is divided into five parts, the first dealing with laboratory methods used in the bacteriological examination of foodstuffs, the second describing the principle organisms which may affect food and the third indicating the methods for the control of fresh meat and preserved meat products, especially those from pork. The fourth part of the book is devoted to the examination of milk and the fifth to the examination of eggs and shell fish.

The book commences with a description of the microscope and its use, then describes methods of sterilization, methods of staining organisms, their culture, both aerobically and anaerobically and the preparation of culture media. This is followed by an excellent chapter on the treatment, housing and use of the common experimental animals. Part I ends with some practical details on the agglutination tests and a few notes on the blowing of glass for laboratory purposes. In the second part the characters of the pathogenic bacteria are described.

In the third part, rapid and practical tests are described for the examination of meat and meat products, including horse flesh suspected of infection with glanders, epizootic lymphangitis and even tetanus. The fourth part of the volume is devoted to a discussion on the examination of milk, although a serious omission is made in that there is no mention of butter, cheese or even cream. The author suggests that it is a mistake to judge

milk too strictly on a bacteriological standard alone and states that its quality should be interpreted by its physical, chemical, biological and bacteriological characters. Considerable space is allotted to the question of tubercle bacilli and *Brucella abortus* in milk and to pasteurization. Part 5 of the work describes in some detail the methods for the examination of eggs and shell fish.

For detailed information for the rapid examination of food material this book should prove of great value to the laboratory worker. The technique of the various methods given is concisely and systematically described and in many cases illustrated by excellently reproduced plates and diagrams. The printing and the paper used are good and the work contains two indexes, one of the subject matter serially and the other alphabetical.—D S. RABAGLIATI.

VIOLLE, H. [Professeur d'hygiène à la Faculté de Médecine de Marseille]. (1946.) Mille questions d'hygiene. **[A thousand questions concerning hygiene.** pp. 410. Orleans: Editions médicales Flammarion. 8vo. Fr. 425. **2439**

This book is essentially a treatise on public health as it affects mankind, but as is to be expected it embraces several diseases inter-communicable between animals and man and deals with certain aspects of our food supply of animal origin.

The subject matter contains questions on such diverse questions as general statistics, social services, eugenics epidemiology, disinfection, bread, milk, the conservation of foods and contagious and epidemic diseases in man. Amongst the matter of special veterinary interest are 22 questions on milk and its treatment, questions on TB., small pox and vaccination, anthrax, undulant fever, spirochaetosis, psitticosis, tetanus and rabies.

As the title of the book implies, there are 1,000 questions with concise and clearly thought out answers and these are contained in 60 chapters. Thus, as can readily be comprehended, the book is essentially one for reference only, but as a memory-refresher it contains an enormous amount of interesting matter. It is rather remarkable, however, that, dealing as it does with numerous foods and nutrition, there are virtually no questions on meat or meat inspection, with the sole exception of one question in the chapter on TB. when tuberculous meat is mentioned. One cannot but feel that this is an unfortunate omission.

To show the type of question a few, taken more or less at random, may be quoted. Thus, under the heading of milk, we read "What are the diseases of the cow which can cause alteration in the milk? What measures can be taken in this case?" In the chapter on TB., "Can we connect animals with the causation of human TB.?" Under undulant fever, "What are the different kinds of brucellosis?" and under rabies, "What are the means of preventing rabies in man? What is the principle involved?"

The book is exceptionally well printed on good paper; it makes easy and pleasant reading and can be recommended to anyone interested in social hygiene. It is, as stated, a work of reference, but it can be opened and read at almost any question with both benefit and interest to the reader.—D. S. RABAGLIATI.

FLÜCKIGER, G. [Directeur de l'Office Vétérinaire Fédéral. Professeur à l'Université de Berne] & VON WALDKIRCH, E. [Professeur à l'Université de Berne]. (1945.) Législation fédérale sur les mesures à prendre pour combattre les épizooties. Commentaires à la loi fédérale sur les mesures à prendre pour combattre les épizooties du 13 juin 1917 et à l'ordonnance d'exécution de cette loi du 30 août 1920. **[Federal legislation for disease control—a commentary.]** pp. 235. Lausanne: Imprimerie Vaudoise. 2nd Edit. **2440**

This most interesting volume corresponds to the Handbook of Acts and Orders relating to Diseases of Animals, published by the Ministry of Agriculture and Fisheries in Great Britain.

The book commences with a short history of the Swiss legislation against animal disease, showing that the present day regulations are based on the federal law of 1917, followed by an ordinance for its execution dated 30th August, 1920. The scheduled diseases in Switzerland are rinderpest, bovine contagious pleuro-pneumonia, foot and mouth disease, glanders, rabies, anthrax, blackleg, swine erysipelas and swine fever coupled with infectious pneumo-enteritis. To this list has been added legislation for dealing with bovine TB., infectious agalactia of the sheep and goat, fowl cholera, fowl pest and *Brucella abortus* infection in cattle. The animals to which the regulations apply include equines, cattle, sheep, goats and pigs.

Transport of animals is prohibited when restrictions relating to any of the scheduled diseases are in force; normally, no animal may be moved from one inspectorate district to another without a certificate of health, which must be obtained from the local stock officer. The railways and steam boat companies may not accept an animal for transport without such a certificate: there is no specific mention of motor road vehicles.

In Switzerland there is strict veterinary and police supervision of markets, fairs, abattoirs and the disinfection of vehicles; a special veterinary inspection is enforced at all frontier posts before an animal is allowed into the country. Super-

vision of all veterinary matters including police duties is vested in the Federal Veterinary Office, which is also responsible for supervision of the Cantons. Each Canton must appoint one or more veterinary officers, mostly whole-time, although in some districts part-time veterinary surgeons may be employed. Each Canton must also appoint a number of stock officers (*inspecteurs betails*), who should, if possible, be veterinary surgeons.

Supervision of contagious diseases is vested in the cantonal services, but outbreaks of most of these must be also reported to the federal authority. Veterinary surgeons and meat inspectors are bound to report cases of the diseases concerned. The slaughter of infected or suspected animals is enforced for certain diseases, such as rinderpest and bovine contagious pleuro-pneumonia, but in the case of F. & M. disease, while slaughter is the rule, it may not be enforced in special cases. If the Federal and Cantonal services cannot agree as to whether the slaughter policy should be carried out or not in any special outbreak, the Department of Public Economy must decide. If the infected animals cannot for any reason be slaughtered where they are, they may be moved, preferably by road vehicle or, if this is not possible, on foot along a road which is not much used by other stock; they may sometimes even travel by rail. Before movement, the feet of the animals must be cleaned, painted with tincture of iodine and then covered with a layer of tar. After this, the feet must be covered by sacking soaked in a disinfectant and the mouth and nose of the animal must be covered with a bag of some impervious material. The surface of the body must also be disinfected. Special precautions are laid down for the slaughter-men employed. When slaughter is not enforced, isolation and treatment must be carried out under the supervision of an official veterinary surgeon. When cured, animals may be worked on a farm where they are isolated, or may be moved direct to an abattoir for immediate slaughter, but they may not mix with any other animals for eight months following the commencement of the outbreak.

One most valuable feature of the book is a description of the symptoms, pathogenicity and possible preventive or curative treatment of the scheduled diseases. In these notes the symptoms are very clearly explained, along with short details as to the official action called for when the disease has been diagnosed.

When slaughter is compulsory, or if there has been any loss due to compulsory treatment, compensation is allowed to the owner on a sliding scale; while this is paid by the Cantonal service, a contribution is made by the Federal Government to the Cantonal service, if application is made by the Canton.

Lists of penalties for breaches of the regulations are given and a list of the recent orders dealing with the commerce of animals is appended. The book ends with copies of numerous health certificate forms used in the movement of stock for various purposes. The paper used and the printing are good and the whole book excellently produced.—D. S. RABAGLIATI.

—. (1946.) **Modern diagnosis.** [Edited by MONCRIEFF, A. (M.D., F.R.C.P.), & THOMSON, W.A.R. (M.D.). pp. iv + 228. 31 figs., numerous tables. Numerous refs. London: Eyre & Spottiswoode. 2nd Edit. 12s. 6d. **2441**

This "contribution to the practical side of everyday medicine" is the second and revised edition of a work of which the first edition was published in 1940. With one exception, the chapters are articles originally contributed by experts to *The Practitioner* and now revised and brought up to date. The outlook of the book is essentially practical: it is intended to provide the general medical practitioner with a guide to some modern improvements in diagnostic methods and deals, to achieve conciseness, with selected subjects which cause the most difficulty. The book is pleasant to read, and although not of specific veterinary interest should start many productive lines of thought in the mind of the veterinary reader.

The chapters are grouped in two parts. Part 1 is concerned with clinical diagnosis. Part 2 deals with laboratory aids in the diagnosis and treatment of TB., laboratory methods in the diagnosis of gastro-intestinal disorders, liver function tests, laboratory investigations in chronic rheumatism, the estimation of renal function, the differential diagnosis of glycosuria, biochemical examinations in diabetes, the technique of simple blood examinations and methods for the collection of blood, the value of the electrocardiogram in general practice, the measurement of the basal metabolism and its variation in disease and laboratory aids to diagnosis in diseases of children.—E. COTCHIN.

HARVEY, W. C. [M.D., D.P.H., M.R.San.I.], & HILL, H. [F.R.San.I., F.S.I.A., A.M.I.S.E.]. (1947.) **Insect pests.** pp. xi + 347. 27 figs., 2 appendixes. London: H. K. Lewis & Co. 2nd Edit. 8vo. 14s. **2442**

The need for the control of insect pests affecting public health has become obvious and an increasing degree of attention is being directed to the study of insects which attack man. The recent War greatly magnified some of these problems and what was considered as little more than a nuisance

is now recognized as a definite menace. The advent of speedy and extensive air travel is likely to add still further to these problems, so that it is imperative that public health officers should keep informed of the latest developments of pest control. To meet these requirements the authors prepared this practical handbook and summarized the essential information on domestic pest control. In the present edition, amendments have been made to each chapter bringing it up to date, while two new chapters on mosquitoes and moths and D.D.T. have been added.

The first part of the book deals principally with the insects concerned and includes chapters on the general outlines of insect control and on the bionomics and control of the bed-bug, fleas, lice, mosquitoes and moths, together with a single chapter on general pests which occur in houses.

The second part of the book deals with the principles and practice of disinfestation; and includes chapters on building construction and infestation, gaseous fumigants; other means of control such as liquid insecticides and their application, insect powders, steam disinfection and soap and water; D.D.T. and gammexane; the technique of fumigation for houses, furniture and removal vans; insect control and educational measures; British legislation applicable to insect control in houses; the toxic effects of certain fumigants on man and methods of treatment; and the disinfestation of foodstuffs and of ships.

The book is well presented and readable and although the subject matter appears inadequate in parts, it must be remembered it is essentially a summary, forming an introduction to the subject. One pest which has been omitted, the stable fly *Stomoxys calcitrans*, is of increasing importance as a vector of disease, and should be included in future editions.—W. Moore.

Soskin, S., & Levine, R. (1946.) **Carbohydrate metabolism. Correlation of physiological, biochemical and clinical aspects.** pp. viii + 315. 75 figs., 41 tables. Chicago: The University of Chicago Press. 8vo. $6.00. **2443**

This study is an attempt to integrate the various aspects of carbohydrate metabolism required by students of physiology, biochemistry and medicine, and it is the expressed hope of the authors that the use of this text as a common meeting ground by the appropriate departments of the same institution will be of help to both student and teacher. As a corollary to this it is also hoped that the material presented will be of value as an up to date review of the present state of knowledge of the subject to the practising physician who seeks to keep abreast of the fundamentals upon which his clinical applications are based, but who may not have access to the very specialized literature from which most of the material is derived; especially does this apply to recent work on tissue enzyme chemistry and the pathological physiology of diabetes. No attempt has been made to review completely the literature on the subject, but the section of more than 1,200 cited references to original papers and work is ample testimony to the thoroughness with which the authors have accomplished their task.

The result of these labours has been to produce a book which should serve as a valuable reference for many years to come. The arrangement of the subject matter falls into five distinct sections, I. "The biochemistry and energetics of carbohydrate metabolism," II. "Introductory physiological considerations", III. Critical survey of the classical criteria of diabetes", IV. "Role of the endocrine glands in carbohydrate metabolism", and V. "Integration of physiological and clinical aspects". The book is most readable and lucid in style, with clear concise diagrams; there are happily chosen simple analogies to illustrate many of the fundamental truths of a very comprehensive subject. What could easily have degenerated into a sale catalogue type of exposition, of interest only to the expert mind already well versed in the subject, has, in fact, become a fluent series of essays, each an entity in itself, but with a connecting theme running throughout.

This is not a subject that can be grasped completely in a single reading, but in a book written essentially for the student, one can feel at every stage the guidance of the expert teacher, always ready to appreciate the difficulties of the student; no doubt much of the clarity of the text was derived from the careful exposition of points with which students have from time to time experienced genuine difficulties.

Although this book is primarily for the student, its outlook is very much wider, and the research worker confronted with problems of normal and abnormal physiology of the carbohydrates will find much that is of value and interest in its pages, particularly of subjects such as ketosis. One can but express the hope that such a useful book will be brought up to date periodically in the light of advancing knowledge; as an important contribution to the student's knowledge of carbohydrate metabolism it should hold a high place for many years to come.—A. E.

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The publication of *Index Veterinarius* commenced with the indexing of the literature of 1933. It is a complete index of current publications relating to veterinary research, public health, administration, education and other aspects of veterinary science.

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